The
NATION'S SCHOOLS
DEVOTED TO THE APPLICATION OF RESEARCH TO
THE BUILDING, EQUIPMENT AND ADMINISTRATION OF SCHOOLS

VOLUME X SEPTEMBER, 1932 NUMBER 3

It Would Be Unfair to Reduce Teachers' Salaries Now

The author analyzes cost of living data and gives six reasons, supported by statistics, why teachers' living expenses have not declined correspondingly with those of nonprofessional groups

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THE adequacy of teachers' salaries must be evaluated, not in terms of actual amounts alone, but in terms of their power.

In the present era of economic readjustment the statement is frequently made that teachers' salaries should be reduced in proportion to the marked decrease in cost of living. The best available measure of the cost of living, and the one usually implied in such statements, is the index number of the United States Bureau of Labor Statistics. This summarizes in comparable form the most reliable statistics that have been compiled regarding varying costs of living in the United States at frequent intervals over a long period of years. Probably no better simple measure can be found. Yet there are several reasons why it is unfair to teachers and similar professional classes and should therefore be used with considerable discrimination and caution.

In order to appreciate the limitations and restrictions upon its usefulness it is necessary to consider briefly the way in which this apparently simple number is constructed. The bureau has taken the cost of various items, "each weighted according to its importance in the average family budget," in December, 1913, and has computed the relative costs of the same amount of similar items at intervals of a few months for succeeding years. For convenience, the cost in 1913 is taken as 100. All later costs then can be conveniently expressed as an index number in terms of the 1913 base as 100. Variations in the composite cost of living index and in its component parts since 1913 are shown in Table I.

The first column of Table I shows the rapid rise in living costs from 1913 to 1920. After several years of comparative stability from 1921 to 1929 a definite downward movement has been witnessed in the past two years. From December, 1929, to December, 1931, the cost of living decreased 25.6 points or 14.9 per cent. The cost of living index in December, 1931, was almost back to the 1917 level, but still almost 50 per cent above the 1913 level. The cost of living in December, 1931, in comparison with the 1913 level was 14 per cent higher for food prices, 35 per cent higher for clothing, 36 per cent higher for rent, 68 per cent higher for fuel and light, 67 per cent higher for house furnishing goods, and 104 per cent higher for miscellaneous items. The miscellaneous items on which prices are collected include street car fares, moving pictures, newspapers, physicians' fees, hospital fees, dentists' fees, spectacles, laundry, cleaning supplies, barber service, toilet articles, telephone rates and tobacco. It will be noted that this miscellaneous group has shown almost no change while food

TABLE I—VARIATIONS IN BUREAU OF LABOR STATISTICS COST OF LIVING INDEX NUMBER SINCE 1913[1]

	Total	*Food*	*Clothing*	*Rent*	*Fuel and Light*	*House Furnishings*	*Miscellaneous*
Dec., 1913	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Dec., 1914	103.0	105.0	101.0	100.0	101.0	104.0	103.0
Dec., 1915	105.0	105.0	104.7	101.5	101.0	110.6	107.4
Dec., 1916	118.3	126.0	120.0	102.3	108.4	127.8	113.3
Dec., 1917	142.4	157.0	149.1	100.1	124.1	150.6	140.5
Dec., 1918	174.4	187.0	205.3	109.2	147.9	213.6	165.8
Dec., 1919	199.3	197.0	268.7	125.3	156.8	263.5	190.2
Dec., 1920	200.4	178.0	258.5	151.1	194.9	285.4	208.2
Dec., 1921	174.3	149.9	184.4	161.4	181.1	218.0	206.8
Dec., 1922	169.5	146.6	171.5	161.9	186.4	208.2	200.5
Dec., 1923	173.2	150.3	176.3	166.5	184.0	222.4	201.7
Dec., 1924	172.5	151.5	171.3	168.2	180.5	216.0	201.7
Dec., 1925	177.9	165.5	169.4	167.1	186.9	214.3	203.5
Dec., 1926	175.6	161.8	166.7	164.2	188.3	207.7	203.9
Dec., 1927	172.0	155.9	162.9	160.3	183.2	204.6	205.1
Dec., 1928	171.3	155.8	161.9	155.9	181.3	190.7	207.1
Dec., 1929	171.4	158.0	160.5	151.9	178.7	197.7	207.9
Dec., 1930	160.7	137.2	153.0	146.5	175.0	188.3	208.1
Dec., 1931	145.8	114.3	135.5	136.2	168.0	167.1	205.4

[1]Prices, Wholesale and Retail, and Cost of Living, Dec., 1931. Washington, 1932.

prices have dropped from 150 in 1921 to 114 in 1931.

If there has been such a marked decline in the cost of living, should there not be a corresponding decline in the salaries of teachers? There are at least six reasons why this measure of cost of living, however, is likely to be distinctly unfair to teachers—(a) weights used to construct the index number; (b) lag in price of board; (c) lag of salaries; (d) variations in different cities; (e) adequacy of the 1913 salary level; (f) changes in preparation of teachers.

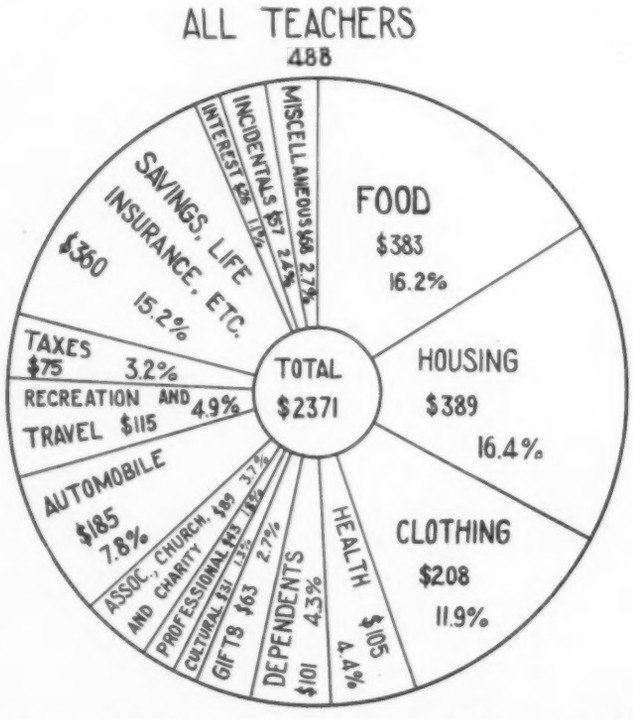


Fig. 1. Analysis of one year's expenses of 488 of the 500 teachers and principals in the Fresno schools.

The various items entering into the cost of living were given weights in proportion to their importance in the family budget of the average working man as determined from an extensive analysis of the budgets of 12,096 families of working men in 1918-19. This is quite different from the budget of professional classes in 1932. More than one-third of the working man's budget goes for food. This is not the case with teachers, however.

For example, in a recent detailed study of the cost of living of teachers in Fresno, Calif., a city of 52,500 population, extensive data were collected from 98 per cent of the teaching and administrative staff and from 91 per cent of the janitorial and mechanical staff regarding costs of living.[1] Each person reported as accurately as possible his expenses from April 1, 1931, to April 1, 1932, under twenty-one different classifications. The exceptionally large percentage of replies to this detailed voluntary questionnaire makes the results unusually representative and reliable. The

[1]Eells, Walter Crosby, Salary and Cost Study of Fresno Schools, Fresno, Calif., May, 1932, chap. 6.

average expense reported by the 488 cooperating teachers was $2,371. The amount and percentage for each of the items of the budget are shown graphically in Fig. 1.

From Fig. 1 it is evident that only about 16 per cent of the expenses of Fresno teachers were for food. On the other hand, the janitorial force reported that 31 per cent of their expenses were required for food, much closer to the weighting used by the Bureau of Labor Statistics. While the marked reduction in food costs in two years, therefore, has reduced the working man's budget materially it has not affected the teacher's budget nearly so much. Yet in the cost of living index, more than one-third of the weight is given to the food factor.

Miscellaneous Expenses Are Still High

On the other hand "miscellaneous items" make up only one-fifth of the working man's budget, as determined by the Bureau of Labor Statistics. The figures supplied by Fresno teachers show that miscellaneous items accounted for more than one-half of the teacher's budget. There has been little if any reduction in the cost of most of the miscellaneous items named above, as shown by the index number, or by common knowledge and experience with other items not mentioned specifically in the miscellaneous groups above—for example, for professional expenses, tuitions, association memberships, automobile maintenance, gas, taxes, life insurance, payments on house and interest and other items.

The weights used by the Bureau of Labor Statistics in building up its composite index number may be exhibited as follows:

Food	114.3	× 38.2	=	4366
Clothing	135.5	× 16.6	=	2249
Rent	136.2	× 13.3	=	1811
Fuel and light	168.0	× 5.5	=	924
House furnishings	167.1	× 5.1	=	852
Miscellaneous	205.4	× 21.3	=	4375
		100		145.8

If we use the same method to build up a composite cost of living index number for teachers, using as weights the percentages reported by Fresno teachers, the result would be as follows:

Food	114.3	× 16.2	=	1852
Clothing	135.5	× 11.9	=	1612
Rent, fuel and light	146.2[1]	× 16.4	=	2398
Miscellaneous	205.4	× 55.5	=	11398
		100.0		172.6

[1] $\frac{136.2 \times 13 + 168.0 \times 6}{19} = 146.2$

This would indicate that in December, 1931, 172.6 probably was a more fair index number for teachers than 145.8.

If the same weights are used to build up a teachers' cost of living index for each year since 1913, the results are as given in Table 2.

Thus for the past ten years the teachers' cost of

TABLE II—COMPARISON OF COST OF LIVING INDEX NUMBER FOR LABORERS, AS COMPUTED BY U. S. BUREAU OF LABOR STATISTICS, AND COST OF LIVING INDEX NUMBER FOR TEACHERS, AS COMPUTED FROM WEIGHTS DERIVED FROM DATA FURNISHED BY FRESNO TEACHERS.

Year	*Teachers' Index Number*	*Laborers' Index Number*	*Difference*
1913	100.0	100.0	0.0
1914	102.6	103.0	— 0.4
1915	105.7	105.1	+ 0.6
1916	114.7	118.3	— 3.6
1917	138.8	142.4	— 3.6
1918	166.7	174.4	— 7.7
1919	191.6	199.3	— 7.7
1920	202.2	200.4	+ 1.8
1921	188.5	174.3	+14.2
1922	183.3	169.5	+13.8
1923	185.5	173.2	+12.3
1924	185.1	172.5	+12.6
1925	188.3	177.9	+10.4
1926	187.4	175.6	+11.8
1927	185.9	172.0	+13.9
1928	186.3	171.3	+15.0
1929	186.4	171.4	+15.0
1930	181.4	160.7	+20.7
1931	172.6	145.8	+26.8

living has averaged more than fifteen points higher than that of the laboring man, and in the past two years the difference has been even greater.

These differences and their relation to teachers' salaries may best be illustrated by further information collected in the Fresno study. This is shown in Fig. 2 and Fig. 3, which exhibit the relation of the salaries of administrators, teachers, and janitors, in Fresno schools, to the United States Bureau of Labor Statistics cost of living index, and also to the teachers' cost of living index as described above.

The dash line in each case represents the cost of living index plotted for December of each year. The solid lines represent the salaries of various school employee groups, all expressed in terms of 1913-14 salaries as a base of 100. As long as the solid line is below the dash line, it means that the salary had smaller purchasing power than the corresponding 1913 salary. This area of shrinkage, where the teacher had to make up the balance from other sources or else not maintain a 1913 standard of living, is shown by single cross hatching. The single cross hatching is thus a measure of the inadequacy of salaries.

For each group except the janitors the "teachers' cost of living index" is shown by the dotted line. It is seen that it parallels closely the Bureau of Labor Statistics index number since 1921, but is significantly higher.

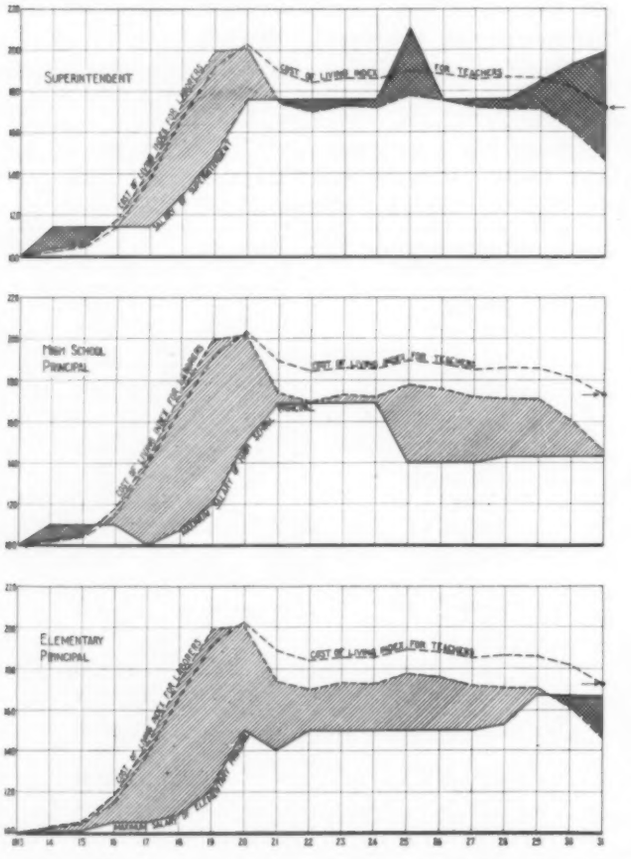


Fig. 2. Relation of cost of living to salaries of Fresno school administrators, 1913 to 1931.

When the solid line rises above the dash line, it shows a real increase in salary measured in terms of purchasing power as measured by the Bureau of Labor Statistics. This period of improved economic status is indicated by double cross hatching. For the most part it will be readily evident that all classes of teachers at Fresno, despite increased salaries, have not been as well off as they were in 1913. Only in the past two years do we see some evidences of compensation for the past shrinkage in purchasing power of their incomes—even admitting that the dash line is a fair measure of the cost of living. The discrepancy is still greater if the dotted line, showing a fairer measure of teachers' living costs, is issued for comparison.

Salaries Are Slow to Rise

Even though food costs may be reduced rather sharply, as has been the case during the past two years, the price of board or of board and room has not been reduced correspondingly. Unmarried teachers are usually compelled to board in the community at standard prices. The general index number shows that the cost of food has dropped from 158 to 114 from December, 1929, to December, 1931. Have prices that teachers must pay for board dropped correspondingly? In order to secure definite information on this important matter, data were secured at Fresno from as many teachers as possible who had boarded at the same place under similar conditions for two to five years. Information gathered regarding fifteen boarding houses and private families furnishing board showed that in only two cases had any reduction been made in the cost of board or board and room, and in those two cases the reduction was slight. If the cost of food has come down in the past two years, and there is no question but that it has, the benefit has gone largely to boarding house keepers rather than to teachers.

The third factor that should be taken into consideration in the use of the index number of cost of living as furnished by the Bureau of Labor Statistics is that salaries tend to adjust themselves rather slowly to upward changes in the cost of living. An examination of Fig. 2 and Fig. 3 will show that in almost every case increase of salaries lagged behind two or three years before they increased to parallel roughly the cost of living. The salaried person was forced to make up the balance in this period of upward adjustment. Similarly, in a downward period of cost of living the salaries should be expected to lag a corresponding amount in compensation.

In Fresno, for example, if we judge by the Bu-

reau of Labor Statistics index number, the superintendent's salary regained its 1913 purchasing power in 1921; the high school principal's has not yet regained it; the elementary principal's regained it in 1930; the high school teachers never have regained it and have had the least improvement over their 1913 status of any of the groups; the elementary teachers regained their 1913 status in 1928; and the janitors in 1930. If, however, we judge by the teachers' cost of living number (shown by the dotted line in Fig. 2 and Fig. 3) the superintendent and elementary teachers are the only groups that have regained their 1913 status after many years of deficiency.

The index number as reported by the Bureau of Labor Statistics is based upon prices secured in fifty-one of the larger cities throughout the country. Prices varied widely from city to city. It can only be conjectured how they vary in the smaller cities and country districts. For example, while the bureau's cost of living index for December, 1931, was 145.8, as previously mentioned, it varied in nineteen cities from 131.9 at Portland, Oregon, to 152.0 in New York City, a range of more than twenty points. It is obvious, therefore, that a single number representing an average of conditions all over the country naturally is not representative for many special localities. Teachers' expenses, however, are determined by local costs of living, not by a national average. Details of the variation in nineteen cities are shown in Table 3.

All studies of changes in teachers' salaries since 1913 in comparison with the cost of living tacitly assume that the level of teachers' salaries in 1913 was adequate and satisfactory. In most states this assumption is more likely to be false than true. It is not the belief of those who are familiar with the trends of teachers' salaries that they were exorbitantly high in 1913. Approximately one-half of the nation's teachers in 1913 received salaries of less than $500 per year. In general, teachers occupied an unfavorable economic position before the World War. At that time they averaged less than 60 per cent of the income of nonteachers. If they were on a lower level in 1913 than they should have been, then all comparisons that assume 1913 as a base from which to make comparisons are fallacious. The only valid conclusion which this type of analysis justifies is that the economic status of the teacher has or has not improved during the periods compared.

A final factor that deserves mention is the marked change in standard of preparation which has taken place in the United States since 1913. A large percentage of the nation's teachers had very meager preparation for their work prior to the war. Thousands of prewar teachers had practically no education beyond that of the elementary school. While their preparation is still far from adequate

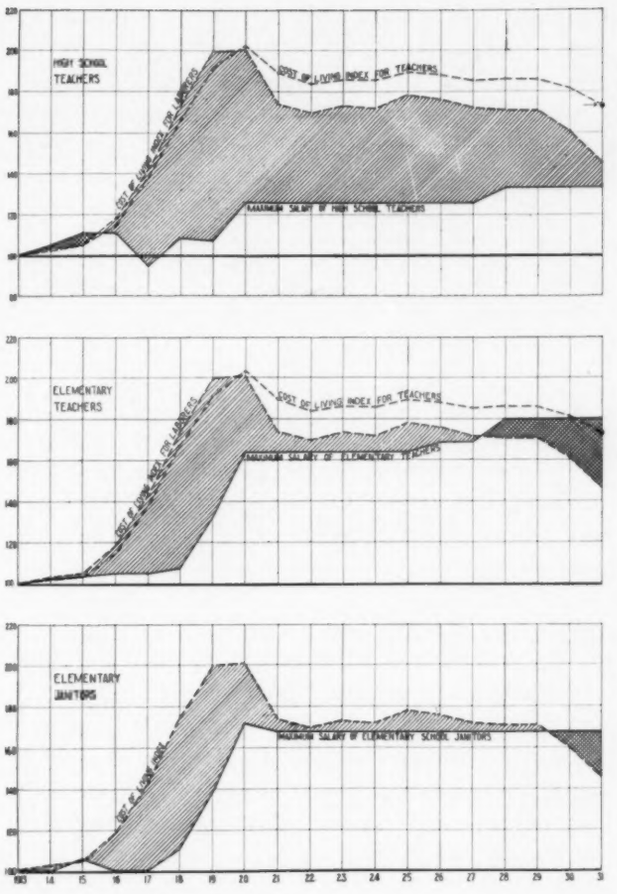


Fig. 3. Relation of cost of living to salaries of teachers and janitors in the Fresno schools, 1913 to 1931.

TABLE III—VARIATIONS IN THE COST OF LIVING INDEX OF THE U. S. BUREAU OF LABOR STATISTICS IN 19 CITIES, DECEMBER, 1931[1]

New York City	152.0
Baltimore	151.8
Buffalo, N. Y.	151.8
Philadelphia	150.5
Cleveland	150.0
Norfolk, Va.	148.0
Seattle, Wash.	148.0
Chicago	146.2
Los Angeles	145.1
Portland, Me.	145.0
Boston	144.1
Detroit	141.9
Houston, Tex.	141.1
Jacksonville, Fla.	140.5
Washington, D. C.	139.0
San Francisco	138.1
Mobile, Ala.	138.0
Savannah, Ga.	133.9
Portland, Ore.	131.9
Average for the country	145.8

[1]Prices, Wholesale and Retail, and Cost of Living, Dec., 1931. Washington, 1932.

in many states, yet striking improvements have been made in every part of the country.

In California, for example, prior to 1921 credentials to teach in kindergarten or elementary school required only graduation from a two-year course beyond the high school. Today, four years of work and college graduation are required. Similarly, where formerly three years of college work were sufficient to secure the high school credential, now college graduation and one full year of graduate work are necessary.

Not a Fair Comparison

The full extent of the improvement throughout the country will not be known, probably, until the National Survey of Teacher Training, now in progress, is completed. Such marked advances in standards of professional preparation alone, however, would justify an increase in relative salary over the 1913 level if there were no other changes to consider.

Thus it is clear that indiscriminate application of the cost of living index number, as computed by the United States Bureau of Labor Statistics, based upon the budgets of working men's families and using nationwide conditions as they existed in 1913 as a basis of comparison, is likely to be distinctly unfair if used today as a determining factor in the reduction of salaries of a professional class like teachers.

To what extent the recent drop in the cost of living will prove permanent is a matter of conjecture, but it is reasonable to suppose that a revival of business will be accompanied by a corresponding rise in the general price level. It is common knowledge that many goods are now being sold at less than cost. Since it is always difficult to get salary scales raised as living costs advance, as illustrated in the diagrams used in this article, it would be unfortunate to permit a temporary situation to affect unfairly a permanent scale.

Some Ways to Save Money in Building Cleaning

The problem of the cleaning of buildings involves two major items—labor and supplies, with cleaning labor by far the heaviest item of expense in building operation, according to R. B. Robley in *Buildings and Building Management*. The article treats some angles of the problem in the following manner:

How can we bring into alignment a high standard of production with no pay roll increase and no replacements? It is no easy task. The farsighted manager, however, will, if compelled, first trim out the dead wood, of which there is always some in any sizable organization. He will enthuse his remaining real workers with the determination to carry on. There is to be no let down in the standard. Quantity will be diminished but not quality. He will maintain in close personal contact to the end that all work will be fairly apportioned, because unfair allotment of work kills the morale of the personnel quicker than anything else.

He should survey the job in its entirety and in detail. He will then be in a position to concentrate on the items of building cleaning that require daily attention for reasons of sanitation as well as comfort. Next he will determine the periods under which the balance of cleaning may be carried on, stretching the frequencies of cleaning as far as possible. It will be found this can be done without seriously handicapping the appearance of the building as a whole and without adding an acute factor of depreciation against the building.

Supplies Should Be Under Lock and Key

Proper and adequate storeroom facilities for receiving, storing and disbursing cleaning supplies should be provided. The storeroom should be under competent supervision. There may be a full-time storekeeper or a supervisory employee, part time. Whoever is charged with this responsibility should be the only one to disburse the supplies. They should be, insofar as is practical, under lock and key and should not be accessible to the rank and file of the cleaning force. The employee in charge should keep a card record of receipts and disbursements which will constitute a perpetual inventory, and will enable him to forecast accurately his weekly or monthly requisitions for replenishment. He should be taught to handle his job as though it were his own investment.

At the final point of check for supply requisitions, there should also be maintained a card record covering the periodic requirements, so that any fluctuation, either up or down, may be quickly detected and a reason for the differences sought and found. Both of these practices will be found easy to carry out, as there are only approximately thirty-five necessary items of cleaning supplies with an average of twenty required under any one requisition. Supervisory employees only should have authority to draw supplies in bulk. This aids in enlisting employees' cooperation in the economical use and disbursement of supplies and avoids the necessity for the working employee making frequent trips to the storeroom, thereby limiting his production.

"When One Picture Is Worth Ten Thousand Words"

Taking instruction from the realm of the abstract and relating it to the practical life of the pupil through the medium of visual aids is the challenge to today's teachers

By EZRA E. MACY, Director of Visual Education, Flandreau Indian School, Flandreau, S. D.

VISUAL education is a subject that has only recently attained prominence in the modern educational world. Although it has been in existence in various phases since time immemorial, it was until recent years outside the pale of general education.

The old adage, "Seeing is believing," proves one indisputable fact—that the greater portion of our knowledge has been obtained through the sense of sight. Primitive peoples preserved the history of their races through hieroglyphics; today we are informed of the progress of an ever changing world through the medium of the press. That the use of visual aids has been given special consideration for some time is shown by the samples of the traveling salesman, the billboard advertisements and the circus parade. In the same way that there have been numerous stages in the development of civilization as a whole, there have also been various ages, the last of which is the visual age, wherein visual education is found to be in its infancy.

Visual education is a means to an end and not the end in itself. The Chinese have a proverb to the effect that "A picture is worth ten thousand words." Assuming this to be true, we can readily appreciate the value of all material that will tend to supplement classroom texts or methods and assist the pupils in visualizing a subject that may be otherwise most uninteresting.

Too often education has been simply a mastering of the printed page, a process of learning that

Charts and materials explaining the making of various industrial products were gladly supplied by manufacturers and were used in class work. Later, the material was placed on display in the school.

An exhibit showing how glue is made is utilized by the instructor in the woodworking class to give his pupils a practical insight into the many phases of this interesting subject.

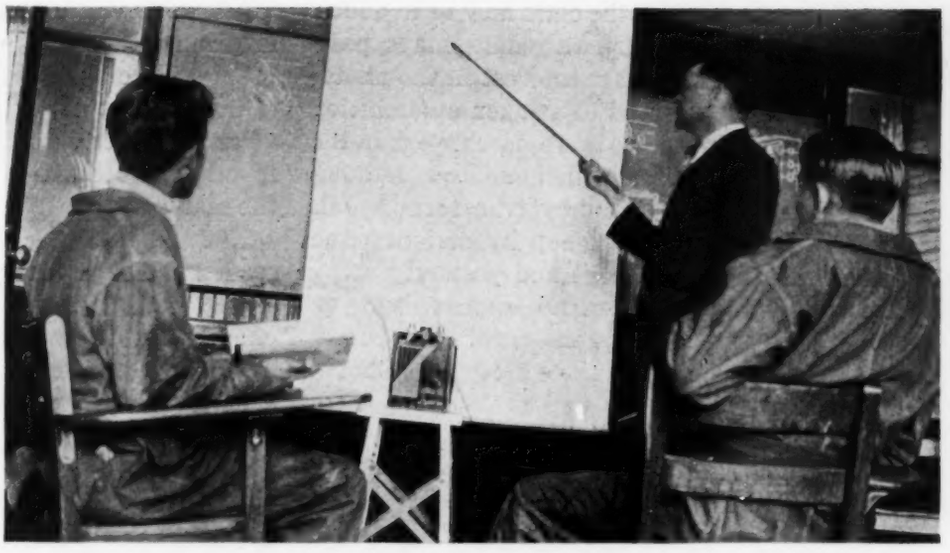
became irksome to the pupil and was fraught with unsatisfactory results for the teacher. This is well exemplified by an instructor of English[1] who was teaching a group of foreigners to read. She found that the members were reading beautifully but had no idea of the content of the material they read. A well organized group of visual aids in time made it possible for the instructor to make it possible for the class to understand the meaning of the printed word.

The Ideal Way of Teaching

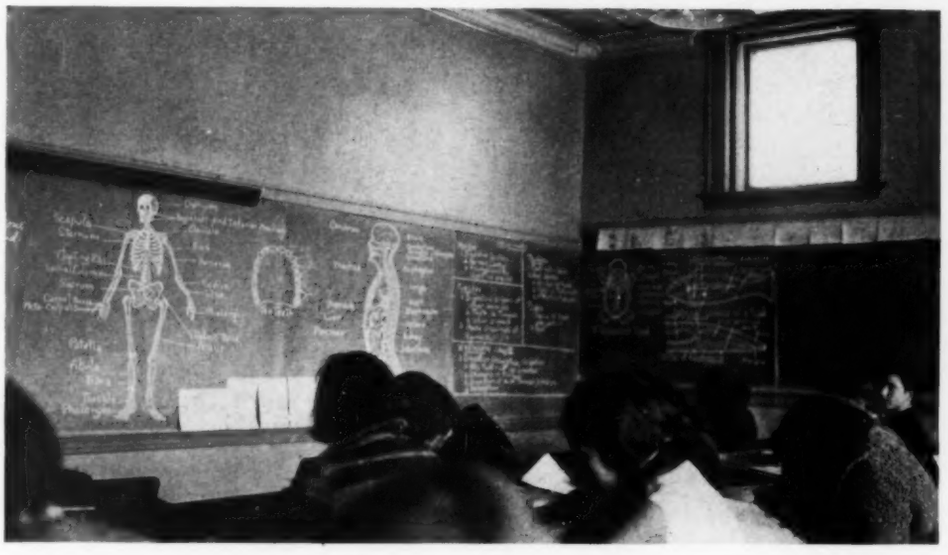
The alphabet and the printed page have been compared to a fetish which awes the untutored mind by its supposed magic. We realize that the printed word is the slowest method of conveying an idea. The spoken word awakens response immediately, whereas a picture gives a comprehensive idea of a subject in its entirety. Now, if we combine the spoken word and the picture with motion through the medium of a talking moving picture we have the ideal background for successful teaching, the nearest approach we can make to actual experience.

There are sections of the country in which visual aids can be used and, in fact, are necessary if much is to be accomplished in the way of education. The use of visual aids in the government day schools among the Indians of the Southwest would produce marked results. In those schools the pupils have not had an opportunity to come in contact with white people, other than the few teachers in the school and a few clerks at the trading post or agency. These Indians can visualize nothing except as it pertains to their own lives in the pueblo. We, on the other hand, cannot picture their beautiful, symbolic dances by reading a brief description of them in some railway folder.

Many of these children have never ridden on a train and have never been in the home of a white person; yet, we attempt to teach them the same subjects and in the same quantity that we would



A storage battery that has been cut to show its interior and a chart are employed by the auto mechanics class teacher to drive home the subject to his class among whom may be future garage workers.



Biology is made more vivid and interesting by blackboard sketches of the human skeleton, a side section of the human body showing the viscera, and anatomic outlines of the turtle and the fish.

teach them to the children of a university professor who has had generations of culture and education behind him. Visual aids truly would be a godsend to those awe-struck, benighted little wisps of humanity who are trying so eagerly to assimilate a white man's education, when their only background consists of the pueblo, chili, pottery and the trading post.

The modern educational systems are making use of all the visual aids that are available to transfer information to the pupils more rapidly and comprehensively during the average recitation period. The sand table, the stereoscope, the lantern slide machine and a few other minor aids have been used for a number of years, but the essential phases of education were too often neglected. These so-called visual aids frequently were used as a form of amusement and the pupil accepted such deviations from his regular class work in a spirit of levity, rather than as profitable instruction. Since every educational institution is offering more and better courses in order to fit the pupil for his life's work, visual aid will solve to the best possible advantage the problem of presenting new and varied courses.

Visual aids that may be easily obtained include: charts, specimens, films, maps, display cards, slides, opaque projection, samples, models, relics, picture files, collections, graphs, museums, diagrams, stereographs, bulletin boards and replicas. To this list may be added excursions to near-by points of interest, such as commercial plants, historic spots and natural wonders. Pageants and dramatizations are always sources of unlimited material and the pupils will always find them a fertile field for the expression of their own personalities. Even the most reticent member of a class will forget his shyness and volunteer unsolicited suggestions when an otherwise prosaic bit of literature is being dramatized.

The ideal instructor is one who is skilled in drawing and who can quickly make drawings to illus-

trate points about which the class may be in doubt. He should be trained to explain graphs, maps, posters and charts; to stimulate interest in the photographs found in texts and to awaken an ambition on the part of the pupils to do research work in the libraries. An instructor with boundless enthusiasm for his work may rapidly transform a dull class into a veritable workshop by assisting the pupils in making scrapbooks and posters.

The use of films involves no inconvenience or waste of time, nor does it interrupt the orderly procedure of the classroom since everything should be in readiness when the pupils assemble. Still films can be utilized for individual work since they can be prepared as easily as slides. Typed matter on slides may be used to advantage and will permit showing on the screen any amount of appropriate material. Too many slides should not be used in a class period, however. Such indiscriminate use will diminish their value.

Ample time should be allowed after the showing of the slides for a recitation or class discussion, so that the pupils may receive the utmost value from the pictorial lesson. All films and slides should be previewed carefully before they are used for class educational work.

Visual instruction, however, cannot be considered as a cure for all educational ills. We cannot hope to accomplish the results that accompany the use of visual aids without first training the instructors in this new technique. The mere presence of visual materials will not ensure their proper use, since there is no magic about them; neither are they playthings to provide novelty instead of study. The instructor's attitude in visual education is important in that the results obtained in the work are gauged by the interest evinced by the pupils which is either active or passive, conservative or progressive. Those instructors who attempt to supplement their work with visual aids and who are not genuinely interested in the visual aid project will accomplish little, and will undoubtedly breed disorder and discontent among the pupils.

How to Use Visual Aids

Visual aids should not displace anything in school work. Instead, they should enlarge, enrich and enhance subject matter. If the instructor is unwilling to expend extra thought and energy in presenting the supplementary work intelligently, he will defeat the purpose of visual aids.

The use of visual materials in the learning process will be greatly increased according to the authors of an interesting book on education,[2] "if the teacher provides, (1) an opportunity for the pupils to prepare adequately for the program of exposure to visual materials, (2) if wise guidance is given during their exposure so that the program will be purposeful and meaningful and (3), if the opportunity is given to carry on activities after the experience, by way of review, which will involve the utilization of the content gained from the materials."

The old listening type of school is being discarded and replaced by the seeing and doing type. Visual education fits here as it does in all life phases. After seeing, pupils should understand, interpret, relate, evaluate and feel. When reading, a pupil may fall into any one of three situations. He may visualize a correct mental picture, he may visualize an incorrect mental picture or he may visualize no picture at all. Books and oral instruction fail to supply experiences. The use of visual aids to assist in the process of education is in conformity with the beliefs of Plato, who said: "I would have a child say not, 'I know,' but, 'I have experienced.' "

Average Cost Is Sixty Cents Per Pupil

Hollinger[3] says that good teachers have discovered that visual aids: (1) challenge attention and stimulate interest in learning; (2) economize time and energy in learning; (3) aid in forming correct concepts; (4) cultivate observation and extend the vision; (5) aid in forming sympathetic contacts with the environment; (6) stimulate the imagination, yet help control it; (7) stimulate constructive and creative thinking; (8) aid in developing appreciation of ethical, esthetic and technical values; (9) aid in developing appreciation of what progress has cost the human race.

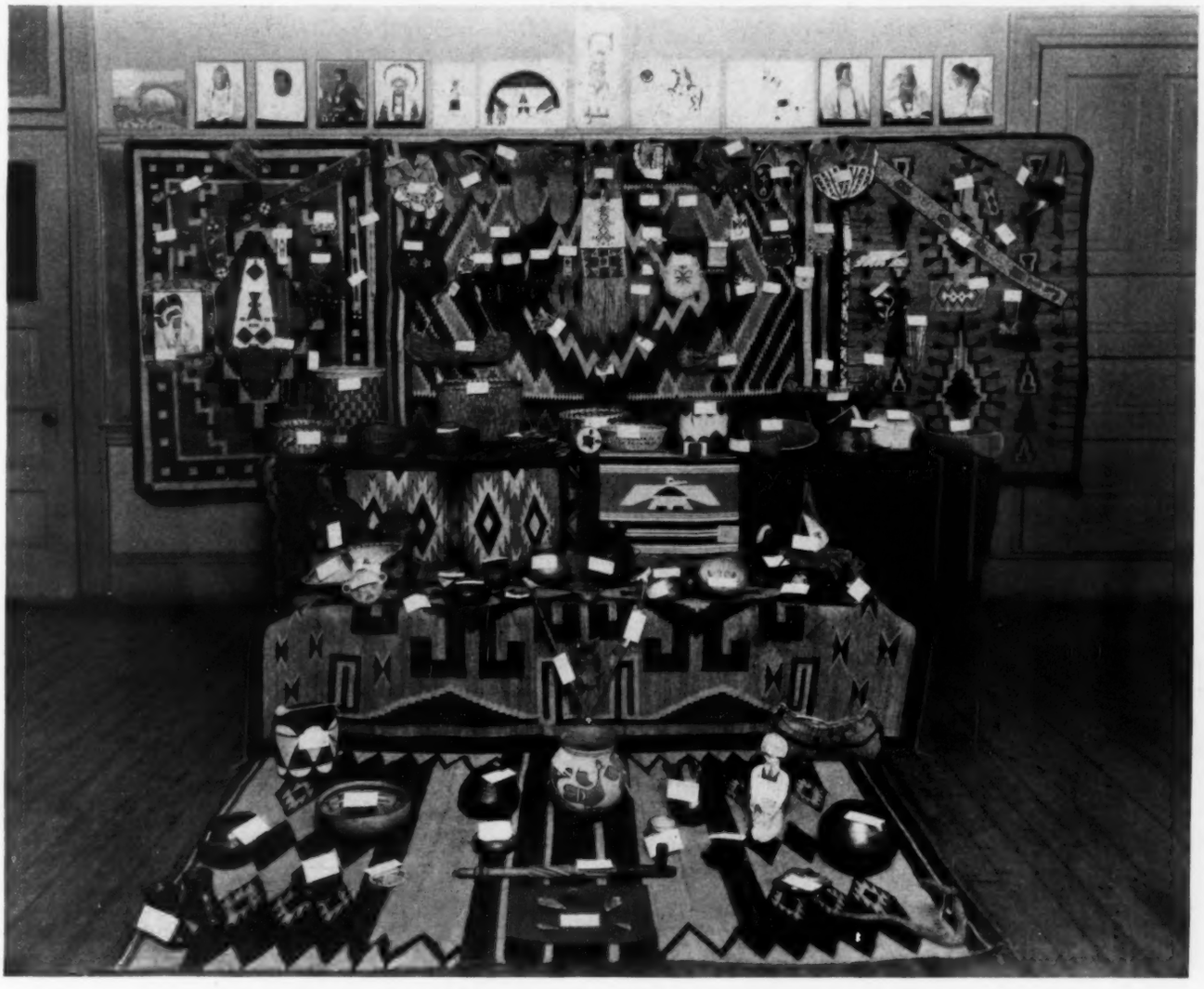
Education must keep step with the modern machine age by enlisting machine efficiency, else it will surely fail in its mighty job. Moving pictures are now available in the home, in business and in educational institutions. Education applies to the child in the home, to the pupil in the grades and high school or the student in college, to the parent in the home, to the employee in the factory, to the nurse in the hospital—in fact, to every man, woman and child, because, as every one knows, our entire life is spent in learning.

Microcinematography has an important place in visual education and its adoption will dispense with the need for a large number of microscopes in a science laboratory. Through its use, the entire class will see the object in its proper light and focus; the pupils will see what the teacher wants him to see, without wasting precious time or straining the eyes. In this type of visual aid there is the possibility of the projection of mounted specimens, of specimens in liquid and the making of drawings of microscopic fields. In the projection of specimens

in liquid a whole class can readily view a single living specimen and thus eliminate the individual instruction in handling the apparatus. The instructor is thus able to hold the attention and interest of the entire class on one specimen, and at the same time conduct the recitation.

The cost of a visual education program is an important item and is one that must be considered; yet, the initial cost is not to be compared with the results obtained. Enlow[4] found that the cost of such a program would range from thirty cents to ninety cents per pupil per year with the average cost about sixty cents. It is impossible to evaluate exactly any definite aid to education in terms of dollars and cents. If educators' opinions and tests by the federal government are discounted and 10 per cent of its present annual cost is arbitrarily assumed as a minimum improvement there is still left an annual value for sound motion pictures of $220,000,000. True economy will best be effected by increasing the use of visual aids and decreasing other expenditures.

Interesting motion pictures will have the same results in a classroom as a summer shower has on a drooping plant. Arthur Brisbane,[5] in referring to educational motion pictures, said recently, "The greatest teaching genius could not in ten hours convey to the mind what these pictures can convey in fifteen minutes." The pupils will more readily grasp new material as it is presented and will be more keenly alive to classroom work in general.



A large part of the school museum's display is devoted to Indian relics.

An instructor must choose material carefully and should not present avalanches of scientific and matter-of-fact data that will serve only to tire the pupils.

Madame Germaine Dulac[6] of France, writing in the monthly publication of the International Educational Cinematographic Institute of the League of Nations which is published at Rome, Italy, says that the precision of the moving picture eliminates the errors of imagination that are so often present in ordinary teaching methods. The pupil who comes in contact with achievements is better developed than one who has only book knowledge. In this

way, knowledge becomes experience and memories, not abstract ideas. To make the work what it should be will require a generation of modern teachers well versed in the "visual education" technique.

A test which was made recently to ascertain the results of showing a picture to a class showed that the film made its chief direct contribution to the clear understanding of concrete situations. The pupil received definite notions of the objects and of the processes he was studying. The motion picture is an effective instrument in promoting the pupil's comprehensions of the physical world to the end that he becomes better acquainted with the world in which he lives. When moving pictures are intelligently planned with the primary purpose of instructing the pupil in the classroom, they will succeed in their purpose of making him think more clearly, thus enhancing his value to society.

Show the Film in the Classroom

Those who might object to talking pictures because they have heard the results of their first production might as well refuse to ride in automobiles because of the large number of persons killed annually in automobile accidents. That the public can be interested in a program of talking educational pictures is evidenced by the recent success of a London theater which is showing only world-wide current events.[7]

If pupils are taken out of the classroom to see a moving picture there is a feeling that a holiday is being had; to guarantee their attention follow-up work should be required. Strayer[8] has said: "The herding of children into large auditoriums in order to exhibit a film which may have little or no relationship to the work most of them are doing, or the use of the stereopticon slide or stereograph merely to occupy time has done much to delay the development of this important technique."

The film should be shown in the classroom where the subject with which it is correlated is being taught. Showing the film at some other time or place often results in a great loss of its value as a visual aid. Teachers have expressed the opinion that a film compels them to conduct a more logical and orderly recitation.

The educational material included in moving picture films is at present largely in the field of the 16 m/m type. To encourage the use of the 16 m/m type one should consider these points: (1) It is less expensive to operate a machine that uses the smaller film; (2) it is more convenient to move a small machine from one classroom to another; (3) since these films are on safety stock, the fireproof stationary booth and licensed operator are not required.

The textbooks' monopoly of prestige in the classroom is threatened since the test made by the Office of Education[9] at Washington, D. C., July 6 to 10, 1931, which revealed a gain of 38 per cent in information on the part of a group of pupils after they had seen and heard educational talking pictures. The use of silent moving pictures had registered a gain of 19 per cent, which shows that the talking picture is twice as efficient as the silent picture. Many benefits are to be derived from the sound films. They provide background or atmosphere, stimulate interest in new subject matter and provide vicarious experiences for the pupils.

In a test carried on by Eastman Teaching Films, Inc.,[10] to ascertain the value of classroom films as teaching aids, the following gains were noted: (1) increased interest in school work and a sustained interest in the topics studied; (2) a quickened originality and a larger participation in project work and other self-activities; (3) a greater desire and ability to discuss subjects and to write about them; (4) an increase in the quantity and an improvement in the quality of the material they read; (5) a clear appreciation of the richness, accuracy and meaningfulness of personal experiences; (6) a greater facility in correlating features of their lessons with community conditions; (7) a contribution to life experiences difficult and often impossible to obtain by any other method; (8) a marked improvement in the range and the accuracy of vocabulary; (9) an ability to concentrate mental activities, to think more accurately and to reason more soundly.

Finegan[11] says: "The films used in the Eastman experiment were not planned to make the work of either the pupils or the teacher easy. There is no royal road to learning. . . . These films, therefore, were not built to do the thinking for a child which he should do for himself."

The results of this experiment showed that the film required a thorough preparation for the classroom work, that it caused a more logical presentation of the lesson, that it contained the basic elements of a topic, that it selected the material to be used from that which was available, that it demanded the conducting of the class in a logical and orderly fashion and that it prevented digression during the class.

Picture Must Fit the Course of Study

The report of the board of superintendents of the New York City schools[12] to the board of education carried the recommendation that motion pictures be used if they are made for instructional purposes and fit into the course of study. It suggested that industrial films although cheap are only a makeshift and rarely fit the curriculum.

With only makeshift costumes and scenery, "The Thundering Herd" was vividly dramatized by the pupils.

Madame Dulac[13] writes that the best educational films exist in Russia where the state requires its children to study and understand social problems. Otherwise the making of films is primarily for commercial propaganda. These films, while they have their place, serve as a detriment to films of high merit in all branches of art.

Television Offers Big Possibilities

Continuing, Madame Dulac says: "The moving picture is not a substitute but a new instrument of thought, knowledge and art. . . . The cinema leads us to understand the entire world and to the inevitable conclusion that, above all questions of race and country, there is humanity and that in humanity there are things infinitely small and infinitely great." She says that fraternity can develop from a knowledge of the entire world. Although moving pictures of different countries will have local marks, spiritual and social internationalism may appear. She calls it a "marvelous international language," promoting a better understanding among peoples. It has been said that the motion picture makers are the mechanics of an international language.

Television is limited in visual education to the extent that the class must await the hour of a broadcast to see and hear the program. A wonderful opportunity exists, however, for reducing the costs of education by arranging to schedule school work to conform to broadcasts of this nature and by correlating the films with the classroom instruction. What material benefits we may have in education from the further development of television is awaited with the hope that it will assist in the further extension of the experience so necessary to the well-being of the pupils.

That there is a trend toward making visual education a necessary part of the training of instructors is shown in the following excerpts from a paper read before the Pennsylvania Visual Education Conference in which Klonower[14] states: "Visual education and all that it means will save us from educational dry-rot. . . . Visual education must become a mandatory part of every school program and teachers must be provided with adequate preparation and a profound knowledge of the philosophy that underlies learning through the senses."

The Basis for a Universal Language

Summing up the foregoing, we find that visual aids are comparatively old features of education with some late additions to comply with the demands of the machine age; that visual aids have been found to increase the efficiency of educational work; that there are many types of visual aids; that there may be situations where visual aids must be used to gain experience; that instructors must be trained to use these advantageously; that visual aids are only materials to supplement teaching methods; that visual education is becoming a world-wide movement; that pupil participation in the use of visual aids encourages experience rather than

book knowledge; that the talking moving picture is being developed to aid further in providing experience.

We find also that tests have shown the advantages of the use of moving pictures; that television may offer wonderful opportunities toward the furthering of visual education; that visual education will eventually become mandatory in school work and that the universal world language that will promote a better understanding among all peoples will probably be developed from the talking moving picture.

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Economy—First Among the Duties of Superintendents

What are the duties of school superintendents? John S. Vaughan, superintendent of public instruction for Oklahoma, classifies them under five heads: economy, curriculum division, scholarship, extracurricular activity and integration of school and community.

"Economy should be the watchword of public school administrations during the next decade," Mr. Vaughan declares. "For the time educational budgets have reached their apex. There may be some increases in total expenditures, but these will not be proportionately as large as enrollment increases.

"Whether we are spending too much money or too little money on education is not the crucial question. Whether or not those who pay the cost can or will continue to do so, and whether the expenditures are in excess of the results obtained are the vital questions."

Economies have been made and will continue to be made in public school expenditures by school administrators, Mr. Vaughan points out. No pattern can be provided that will produce economies in every school community. What would be effective in one school might be ruinous in another. No measures should be adopted that will reduce the efficiency of the school if it can possibly be avoided.

"The public is clamoring for reduced taxes," he continues. "The superintendent must not be calloused to this appeal; neither must he be overwhelmed by it. The children are his clients. They cannot defend themselves or their interests; the superintendent must. If the schools are crippled the children will be handicapped throughout their lives.

"The parents no more want to sacrifice the interests of their children than superintendents do. If they insist on reductions that vitally affect the efficiency of the school, it is ignorance. They do not know the facts as the superintendents do.

Teaching Economy to Parents

"It is the business of the superintendents then to teach them. They must be taken into the superintendent's confidence, shown in detail the superintendent's program and provided with information that will enable them to determine their school expenditures compared with other similar schools in the state and with schools throughout the country.

"If, after the public has been fully informed as to the minimum needs of the school, it still insists on reductions below that minimum, I know of nothing else for the superintendent to do. In the last analysis they pay the bills, and have the final say as to how the money shall be spent."

Mr. Vaughan offers the following suggestions for effecting school economies: increasing the teaching load; eliminating unnecessary and expensively small classes; centralizing small high schools; eliminating duplication in administration; eliminating waste in operating cost; weeding out activities that have small or questionable value; reducing teacher salaries, which is already being done.

No single procedure can be applied to all schools. It is possible, however, that economies can be effected without injuring the essential values of the school program.

"The curriculum should be revised in the direction of modern needs and simplicity," Mr. Vaughan emphasizes. "Modern needs require the teaching of subject matter that is necessary to an understanding of and adjustment to modern life. The greatest need at present is a wide range of information, command of the skills of getting and communicating thought, proper social attitudes and the ability to study."

Do the Public Schools Cost Too Much?

"No," says the author of this article and points out why education costs more than it used to and the numerous benefits children and taxpayers are receiving from the money spent

By WILLIAM A. COOK, Professor of Education, University of Cincinnati

THE well worn topic of school costs has been widely discussed since the onset of the present economic depression, possibly more so than ever before during an equal length of time. Proposals to cut public expenditures are starting with the public schools, as is customary, and in many cases doubtless will end there.

In this discussion of educational expenditures the press takes a prominent part, but by no means always a helpful or intelligent one. Editorials often compare total expenditures for public schools of the past with those of today, a comparison that without explanation excites only astonishment among laymen. Editors sometimes make crude contrasts between the increase in population and the increase in school expenditures. They may show how the cost per pupil has changed, but they rarely do so. If the public is to understand the financing of its schools, the school administration itself must spread the necessary information.

Though statistics are somewhat reliable from 1870 on, it may be better for our purpose to compare returns for 1890 with those of 1928.[1] Many of our most prominent citizens were school children in 1890. They can supplement statistical information with their personal knowledge of the schools they attended and of those now provided for their descendants.

Number of Pupils Has Doubled

In the thirty-eight years from 1890 to 1928 the cost of public elementary and secondary schools increased from $140,506,715 to $2,184,336,638. With these totals one need not pause. For the ordinary individual they have little meaning. Their significance lies in the fact that the cost of public schools multiplied almost exactly 15.55 times in that period. What can be the explanation of this?

That the population almost doubled in the time chosen for comparison is the first obvious fact. Since people live longer than formerly, the number of children from five to seventeen years of age inclusive did not double; it increased from over eighteen million to less than thirty-one million.

The cost of education, nevertheless, should depend not upon the total number of children but upon the number of children in school. The number of pupils enrolled swept from 12,722,581 to 25,179,696 in the period under consideration. The probability that some children were counted more than once in the year in spite of precautions was greater at the earlier date. It consequently is likely that the number of different children enrolled did actually more than double from 1890 to 1928.

School Term Is Longer Now

But it is less the enrollment of a child in school sometime during the year than his regular attendance after enrollment that explains the cost of operating the schools. The statistics of average daily attendance have risen from 8,153,635 to 20,608,353. This is due primarily to the compulsory attendance laws, unknown south of the Ohio and east of the Mississippi in 1890, and not rigidly enforced in most of the other states at that time. If we reason from this basis, the cost of education might have been expected to increase two and a half times during the period of our comparison.

Yet one more allowance must be made, if we are to form a fair idea of the amount of education administered. In 1890 the average annual term of school was 134.7 days, while in 1928 it was 171.5 days. To allow for this change, the aggregate days' attendance by all pupils must be computed. This was 1,098,232,725 for the earlier date, and 3,535,249,377 for the later one. As a result, the increased cost as measured by attendance should have been 3.22 times as great in 1928 as it was thirty-eight years before.

We turn now to an entirely different line of evidence. It is customary for educational workers to maintain that teachers are underpaid. In many

places too little may be paid teachers, but that conclusion is not inconsistent with the proposition that each teacher generally receives about what he is worth. In other words, the economic principle is basic that in the long run we get in educational service just what we pay for. The fluctuation in the purchasing power of the dollar must constantly operate in education through alteration of building costs, outlay for sites, living expenses of teachers and all the other divisions of educational expenditures.

Other Reasons for Increased Costs

A report of the U. S. Department of Labor indicates that retail prices for food rose until that which a dollar purchased in 1890 cost $2.22 in 1928.[2] For fuel the rise over the part of that period for which statistics are available was probably still greater. Data on wholesale prices have not been preserved over the whole period, but from 1913 to 1928 they increased for all commodities only slightly less than retail prices of food over that fifteen-year period.[3] It is hard to say just what change has occurred in price levels, but if we consider food, the most important item of ordinary living expense, school costs on that score should have increased 2.22 times in the period studied.

Let us add a third quantitative factor to the amount of attendance and the altered purchasing power of the dollar. In 1890 only 1.6 per cent of the pupils were in high school. In 1928 this had changed to 15.5 per cent. An investigation of high school and elementary school expenditures leads to the conclusion that it generally costs about two and a half times as much to educate a child in the high school as one in the grades. If no other change had occurred during the period of our comparison, the mere relative increase in high school attendance would have brought a growth of 21 per cent in the cost of education. This greater outlay for a high school child than for one in the grades may be unwise, but the mere fact that it is general shows the different standards of preparation of teachers, curricular offerings, wealth of equipment and class size demanded by the public for its high schools.

To summarize the facts thus far presented, let us account for the increase in the cost of education as represented by the product of the three factors discussed:

3.22 (index of increased attendance)
× 2.22 (index of decreased purchasing power of the dollar)
× 1.21 (result of relative increase of high school enrollment)
= 8.65

Instead of reporting superficially that educational costs have increased 15.55 times, we should therefore say that conditions quite independent of the commodity, education, have so altered that the article itself has intrinsically grown in cost to almost double the earlier figure, as represented by the equation

$$15.55 \div 8.65 = 1.80$$

The case, of course, is still understated, because the figures given take no account of an extensive parent and adult education program practically unknown in 1890. Our evening schools for general continuation purposes, vacation schools for the delinquent and those ambitious for extra promotion and Americanization classes illustrate large undertakings not considered in what has been said.

The remainder of this inquiry will seek to ascertain how far the quality of the commodity, education, can explain an increased cost of 80 per cent. In this connection personal experience is the best measuring stick.

All will accept the qualifications of the teacher as one important determinant of the quality of school training. I attended a rural school in northern Illinois in 1890. It was regularly taught by graduates of a two-year high school in a neighboring village. They were without professional training, but obtained their certificates by examination. The school law of this state today permits a candidate for a certificate to escape examination by the county superintendent only by presenting evidence of a training course two years in advance of high school graduation. The plain inference is that the examination is roughly equivalent to that amount of schooling. Thus in the period under discussion, Illinois has extended by approximately four years the minimum training for teachers. Have other states advanced as much? A number undoubtedly have made even greater strides in raising the qualifications of their teachers. The annual summary of educational progress published in the *Journal of the National Education Association* always contains numerous notes on the raising of professional standards.

School Buildings Are Greatly Improved

Observe the physical conditions surrounding the child in school. My rural school in those "good old days" was heated by an unjacketed stove, which blistered those nearest it on winter days, while those at a distance shivered. Many city schools contended with similar conditions. The unjacketed stove today is prohibited by law or administrative regulation in some states, and in others is generally banished as a result of enlightened public opinion. Central heating, with delightful evenness of temperature and mechanical control, is insisted upon by citizens everywhere.

Ventilation in the 'nineties was accomplished in rural schools by raising and lowering the windows, without the aid of "window boards" to deflect the cold air. In inclement weather there was little need to adjust the windows, for the construction of the building permitted ventilation. The little schoolhouse, whether white or red, was a cheap and flimsy frame structure, by no means comparable to the substantial school buildings of brick and other material now so common in both town and country. The jacketed stove of a modern rural school circulates the air, as does the mechanically operated ventilation system of a city school. In 1890 the importance of humidity was not understood, and the dry atmosphere on severe wintry days heightened the susceptibility of the children to diseases of the respiratory tract. The majority of modern buildings, even if they have only a single room, have some provision for humidification.

If there is any question of the consideration given to children's eyesight then and now, glance at the exterior of old and new buildings. The more pretentious structures of four decades ago had narrow windows, separated by bands of solid wall, often having a Gothic top. No attention was given to examination of the eyes of school children, and the school authorities were unconscious of their culpability. Today we have an abundance of light to promote general health as well as the hygiene of the eye.

Now the Pupils' Health Is Protected

In 1890 no health supervision of any kind existed in any appreciable number of schools, and legislative provisions on this matter did not exist. True, thorough health examinations of school children are not yet universal, but hardly a section of the country is so isolated as not to enjoy the visits of a school nurse on some occasions. Hundreds of schools supplement physical examinations by clinics for the treatment of visual and dental defects. Large systems provide special facilities at staggering costs for deaf, blind, crippled, subnormal and delinquent children, groups that not long ago were herded into regular school rooms everywhere. Forty years ago state institutions accommodated a few of these children, but local schools for the purpose were an ideal, not a fact.

Nearly all persons now over thirty years of age used to drink from a common cup in their school days, washed in a common basin and wiped their hands on a common towel, if in truth their hands were washed at all during the school day. Now there is hardly a state in which the common cup or common towel can be found in a public school, except in violation of the law. Water for many rural schools was carried from a farmhouse. Often the pail was empty before the child who "passed the water" had fully made his rounds. Drinking fountains for health, lavatories for cleanliness and health, and paper towels for sanitation are provided today as a matter of course.

Is it necessary to refer to the distinction between the outdoor toilet of forty years ago and the comfort and the moral and physical healthfulness of the indoor toilet now found in schools of almost every town and in most rural consolidated schools?

School Transportation Costs Millions of Dollars

Healthy children love to play and should have the chance to do so. The standard space per pupil on an elementary school site today is fixed at about three times what it was twenty-five years ago. Our playground equipment in 1890 consisted of a hickory bat cut from neighboring timber and a rag ball sewed by a busy mother. From the latter we graduated to a solid rubber ball. Perhaps half the high school team had proper playing clothes of some sort, though each uniform was likely to differ. Funds for the present day athletic program come partly from gate receipts, but the public purse today supplies grounds, gymnasium or stadium, and a great deal of the equipment.

In 1890 transportation of pupils had not been developed. Children were kept away from school because of distance, unfavorable weather and minor ailments. Chilblains still remind adults of the days when they waded the drifts and emerged with frostbitten toes, fingers, ears or noses. In 1932 parents complain if a school bus does not pass their door. Children are no longer expected to freeze; they must not even become cold. The moral risks of walking to and from school with all sorts of companions is past for the thousands who fill the school conveyances daily. The organization of larger districts has been made possible. Transportation annually costs forty million dollars, but how many districts are ready to discontinue it?

Free texts were required in two states in 1890. The school provided instruction, but it was the business of parents to get their children to school and to equip them with all necessary supplies. Today nearly half the states are on a universal free text basis, and an extensive spread of the practice into other states is observed. Between twenty and twenty-five million dollars are spent each year by the schools for texts, with many other accessories of instruction donated by a generous public. All these various paternalistic movements stand for a service that costs money. When agitation for reduction of expenses is heard, few propose seriously that these services shall be discontinued.

The inelastic curriculum once cut expenses. All children studied exactly the same subjects throughout the eight-year elementary school. High schools offered few electives. The alternative was "Take it or leave it." The majority left it. I attended a high school of 175 pupils in which the only vocational subject offered was a half-year of bookkeeping. Agriculture, industrial arts and home economics were not thought of. Almost any high school of half that size now will allot one or two teachers entirely to vocational interests. This service to children of all interests and all ability levels is widening. Demands for equipment multiply. Many elective classes are comparatively small and expensive. Each parent wants what his child needs. Any failure to equip his son or daughter for business, college, industry or the home is met by his unstinted criticism. But the school works no miracles; all of this costs money.

Frequently the public schools are said to ignore the fundamentals and to emphasize the frills. Some persons contend that with all the added facilities that have been mentioned the quality of education has deteriorated. These persons produce no evidence that would pass in any court. They aver that in the old-fashioned spelling matches or ciphering contests the school champions contended long and valiantly. They forget that the other contestants were spectators after the first few minutes. Argument is no longer necessary, however, since the proof of our case is at hand. The famous Springfield Tests repeated sixty years after the original tests were given[4], and the Boston Tests given to the greatgrandchildren of those who first took them[5], afford abundant evidence that with all the time spent on newer subjects the children today are better qualified in spelling, writing, geography and arithmetic than the oldtimers who gave full attention to the aforesaid fundamentals.

We Live Thirteen Years Longer

If there remains any doubt whatever as to the better quality of education today, it is proved by the increased length of life. High authority declares that from 1909 to 1925 the average span of human life increased thirteen years in this country.[6] This is the result of public education in the main. First, public foundations and institutions, aided by excellent private ones, have opened the way to research by a few specialists who have demonstrated the causes of disease and death and the measures conducive to health and longevity. Second, public institutions and some excellent private ones have trained an army of technicians in the expert application of these principles to their millions of patients. And third, the schools have broadcast this health information until the people are willing to live more healthfully and to entrust themselves to the hands of the technician. When patent medicines finally disappear, we shall thank education. Public school workers generally testify to the altered attitude of parents toward vaccination and other health measures for children. How much are thirteen more years of life worth to a taxpayer or to his children?

What more is to be said? Take the business man or the manufacturer. Never does he lament that the gross cost of his establishment is 15.55 times as great as forty years ago. He computes costs only in relation to output. The American people will be equally wise in regard to their schools, if educators carry the truth to them.

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Stimulating the Quest for Health Among High School Pupils

Only 15 per cent of the high school pupils in the United States are at present taught physiology, Dr. J. F. Rogers, consultant in health education, Office of Education, states in an editorial appearing in *School Life*.

The reason for this lack of knowledge, he asserts, is due to the "millstone of college requirements" hung about the necks of the pupils. "Colleges," he continues, "do not care whether a boy knows anything about his bodily machinery and how to keep it in its best running condition.

"More important at high school age than the teaching of physiology is the getting somehow into as many of these young lives as possible the ambition to be somebody and do something, and with it the hint that a person is not likely to get any farther in his chosen way than his bodily machinery permits. If the pupil gets these ambitions and this idea, there are many sources of health information he will eagerly search for and utilize himself.

"A writer in the *Contemporary Review* remarks that the word 'health' has undergone a sad degeneration. Originally it meant or included beauty and goodness.

"I wish we could all do more to bring the word back to its original significance by stimulating a little more the quest for beauty and goodness in their larger meanings, which quest alone makes the highest health possible and makes any health worth having."

Caring for In-School Convalescents —How One School Does It

The University High School, Oakland, Calif., has experimented for several years with the problem of caring for pupils who are not fully recovered from illness and has developed a practical system

By PAUL FLEMING, Vice Principal and Dean of Boys, University High School, Oakland, Calif.

UNIVERSITY High School, Oakland, Calif., the training school for secondary teachers of the University of California, has for years had a health service devoting much time and thought to the interests of high school pupils. For a number of years the school has provided an allotment of physicians' and nurse's time greater than that of other Oakland schools because the University of California and the Oakland school department have given joint financial support to the program.

A nurse is on duty each morning of the week. A woman physician for the girls and a man physician for the boys give their services for one day each per week. The school has two health coordinators, a man and a woman, who are teachers assigned for a portion of the day to this work. These coordinators are concerned with the administrative and educational phases of health teaching and health service. It is their work to see that the efforts of the nurse and the physicians are wisely expended and to act as communicating agencies between teachers and the health offices of the school. They also have important functions in the work of health committees composed of physicians, nurses, teachers and administrators. These health committees discuss and settle matters of policy concerning health service and health education in the school.

For a considerable time these committees and certain subcommittees have been concerned with problems of readjustment of pupils returning after illness. For five years it has been the practice to require each pupil so returning to be readmitted by the nurse, who decides whether he is in a proper state of health to resume school work, or whether he is or is not a menace to others in the school. The nurse also has at that time made recommendations as to a lightened physical education load.

All Boys Take Daily Sun Baths

In both the boys' and girls' physical education departments there are five levels of activity. The schedule of activity of the boys is given as an illustration: (1) bench or sun baths (that is, no activity, merely rest, exposure to light and air; on cloudy or cold days assignment to the study hall); (2) horseshoes and other similar games (activity involving a slight amount of movement, no rapid or violent exercise); (3) shooting baskets, playing catch and passing the football (light ex-

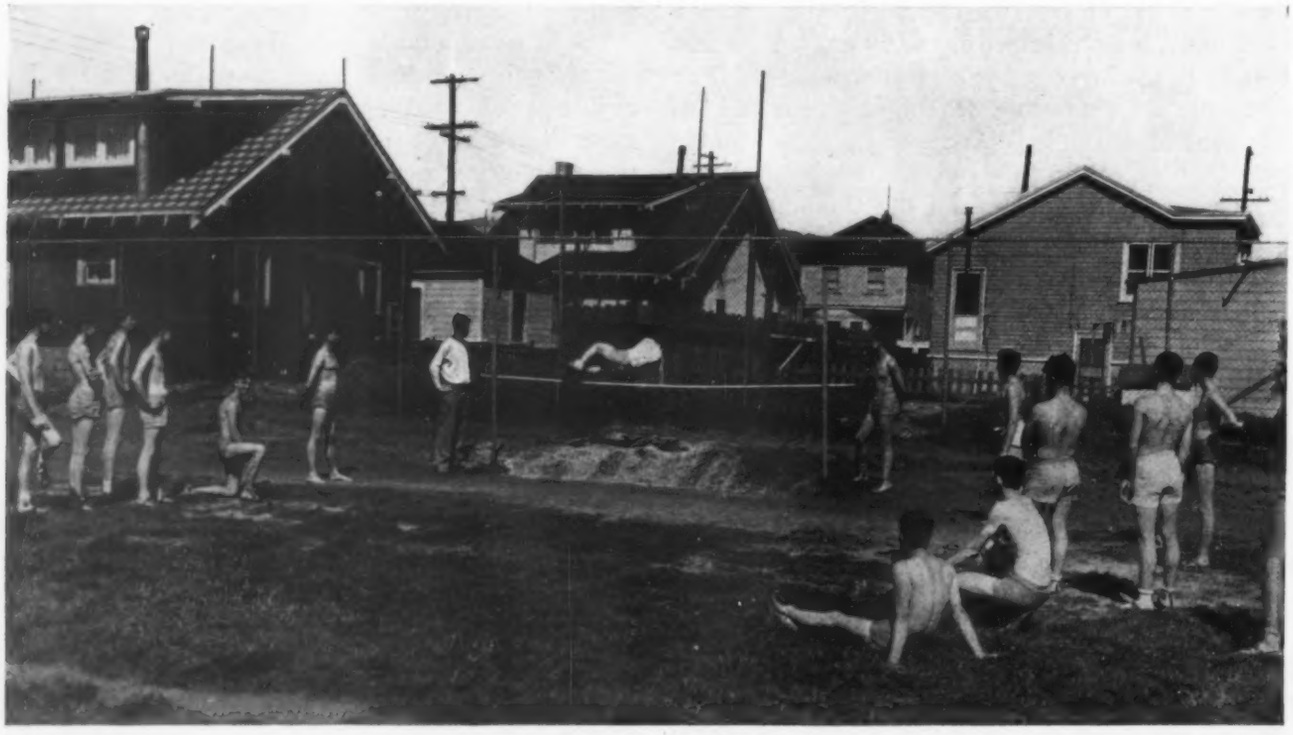
ercise at will); (4) full activity program, games, exercise, basket ball, boxing and wrestling, but with about half the time of the activity period; (5) full exercise, full period. The boys in University High School, in whatever class of activity, take sun baths each day the sun shines. The standard costume for boys' classes is gymnasium shorts and shoes. As far as the girls are concerned, there is no available place where sun baths can be provided, but there is a range of possible activity, analogous to that of the boys', from complete rest to vigorous exercise.

Reports have for some time been sent to counselors and teachers naming returning absentees and giving the reason for their absence. It has then been the counselor's responsibility to modify the school load if that seems advisable. The personnel officers of the school, the dean of boys and the dean of girls, have been active in this work.

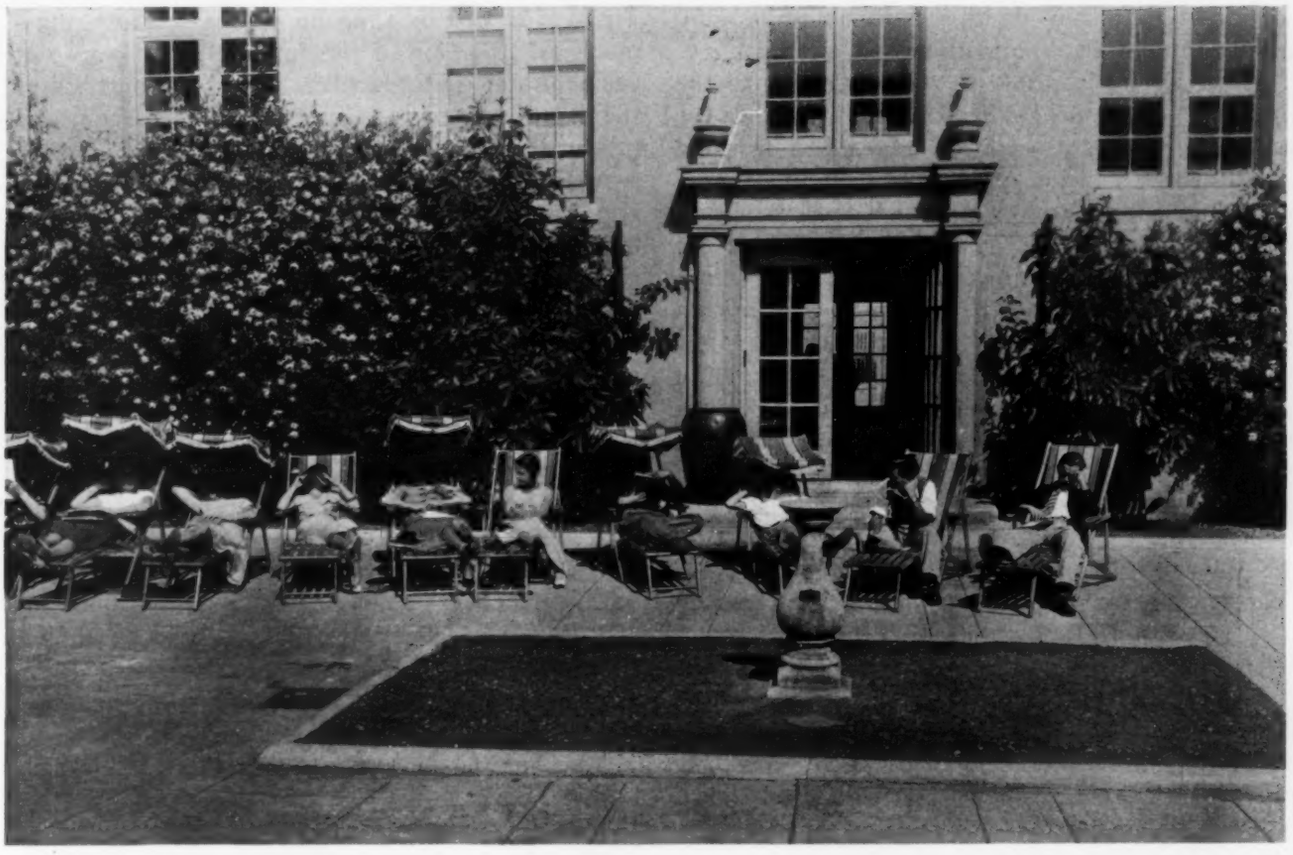
The returning absentee is examined by a staff physician at the first opportunity, and a note of his condition is made. On the day that the staff doctors are present, a "health case conference" is held during the last school period, the personnel of which includes the physician, the health coordinator for boys or girls, the dean of boys or girls, and the head of the physical education department for boys or girls. The cases of all pupils who have seen the physician that day are reviewed at this conference. The conference either confirms, extends or revokes the tentative decisions of the nurse and the counselor. Thus,

HEALTH CASE CONFERENCE MINUTES

Name	*Doctor's Findings*	*Recommendations 3/11/23*
Clarke, Spencer L10	Eyes abnormal. Needs glasses badly. Unable to provide them through either clinic or school fund.	O. K. for Biol. Trip.
Krueger, Carl L10	Slight stiffness of knee due to former injury and operation.	Continue P. E. 3.
Magill, Russell L10	Eyes tire after reading.	O. K. for Biol. Trip.
Gaston, Alex L10	Condition O. K.	O. K. for Biol. Trip.
Ryan, Milfred L10	Condition O. K. Has new glasses.	O. K. for Biol. Trip.
Banker, Wayne L10	Edema of leg. Cause unknown. Has been in Highland Hosp.	Nurse to contact mother re further exam. Not to go on Biol. Trip. P. E. 1.
Flanders, Jim H11	No apparent glandular trouble. Tonsils large and infected.	Family to see specialist.
Ebke, George L12	Examined for track. Heart test hyper-normal.	O. K. for 880.
Stone, Henry H12	Throat slightly irritated but otherwise O. K.	Discharge from R. 35.
Schmidt, Oscar H12	Nose condition cleared up. Eyes improved. Has now cut program to three subjects and will leave for Europe around May 1.	
Crane, Harry H12	Absent due to eye trouble.	Discharge from R. 35.



Five levels of activity are provided by the physical education departments for boys and girls. This group is taking it a little bit easy until able to stand the more vigorous forms of exercise.



A group of pupils enjoying the quiet and restful atmosphere of the court adjacent to Room 35 where a variety of activities are possible, from preparing lessons to sleeping.

a pupil who has had a serious illness may be advised to reduce his subject load, or even to delay graduation in the interests of his health. Then again, the conference may grant permission for a pupil to drop one or more periods from the school day and add to his home rest. Under the California school laws concerned with school support from the state a regular day for purposes of computing average daily attendance is four clock hours. Thus it is possible to reduce a pupil's load from the standard six-hour day to four hours without incurring loss of state or county support.

The health case conference may also ask for a consultation with the parents. In fact, few drastic changes are made in a child's program without such conferences. At this conference, usually attended by a vice principal and often by both a vice principal and a physician, the parent may be advised as to general care; the pupil's work load at home or in private employment may be discussed, and adjustments arrived at. The minutes of the health case conference are written as indicated in the accompanying form, and a copy is sent to each member of the conference.

Such was the routine up to the fall of 1930. It shows that University High School already was making considerable efforts to adjust pupils to the life of the school when they returned from illness. However, it was noted by counselors, administrative officers, interested teachers and physicians that some pupils returning after serious illness recovered more slowly than they should, and that not all the needed adjustment was being made. Despite recommendations of counselors and administrators that plenty of time be taken to complete work lost, pupils were often of their own intiative spending four or five hours outside of school to complete old assignments in geometry, science or other studies and at the same time striving to keep up with the new daily assignments.

A Convalescent Room Is Provided

This situation was aggravated by the fact that University High School is largely a college preparatory school. More than 70 per cent of the graduates continue their education. For most students, therefore, their rank in class is a matter of first importance. What most of these pupils needed, apparently, was rest for a portion of the school day. They needed complete relaxation from class surroundings, yet within the school, so that they might carry on their school work and get back to their proper level in the class. It was

necessary that they do this without prolonging unduly the period of convalescence.

In the spring of 1930 it was suggested to the University High School health committee that the state tuberculosis association might be interested in aiding the solution of this problem and a committee was appointed to approach the officials of the association. This committee considered the possibility of asking financial support from both the state and the county tuberculosis associations. After a meeting held at the school in which the health education program of University High School was presented, both associations made grants in the amount of $1,500 each for providing rest or convalescent rooms for University High School and several contributing schools. The associations were influenced in their decision by the opportunity presented in University High School to present to training teachers a program for the conservation of health after illness. A committee of University High School teachers studied the requirements for such a room in the University High School and in the fall of 1930 purchased the necessary equipment, including steel couches, canvas cots, mattresses, blankets, pillows, steamer chairs, sheets and pillow cases. This material was distributed to the five schools sharing in the plan on the basis of a survey of their individual needs. University High School was equipped with twenty deck chairs, ten metal couches, blankets and bed linens.

Plenty of Sunlight for the Pupils

Certain criteria were established by the committee in the selection of a room, these being: size, light, air and freedom from noise. Finally, as the best possible compromise between an ideal situation and one that was possible in the school, a room that had been used for a study hall was selected. It was possible, by the use of honor study groups, to arrange for this room, which had a capacity of 100 desks, to be vacated. Its dimensions were 27 by 55 feet. The board of education retinted the walls and ceiling and removed the blackboards. The committee arranged for linoleum on the floor, for draperies at the windows and for a partition partially dividing the room into boys' and girls' sections. In addition to the equipment noted, the board of education supplied standard oak tables and chairs. This room, referred to in the school as "Room 35," has peculiar advantages in addition to its size and convenience. It adjoins the library and also an open air court by a short passage so that pupils can be out of doors on bright days.

The first use was made of the room by assigning to it returning absentees in November, 1930. There was at this time no paid attendant, inasmuch as a portion of the funds allotted were not yet available. Pupils from service committees of the school helped in taking care of the room and it was the general opinion that it represented a real advantage to convalescents, although the situation was not as satisfactory as it would have been had a full-time attendant been in charge.

Routine Is Now Well Established

In April, 1931, a certificated teacher was engaged to take care of the room. There was no precedent, as far as could be learned, for her work. However, she was a tremendously interested, able person who studied the task from the first, conferred frequently with the other members of the staff who were most directly concerned with the operation of the venture, made notes on activity within the room and during the remaining months of the spring term, 1931, began to develop policies for its conduct.

Our routine now is well established. A child who returns after illness meets the nurse as before. The nurse makes a recommendation for assignment to Room 35, unless it is clear that no need exists for adjustment; for example, when a pupil has been ill just previous to spring vacation and has recuperated completely before returning to school. The nurse also indicates the number of periods she believes should be assigned. This recommendation goes either to the dean of boys or the dean of girls, who issues the assignment to Room 35. Ordinarily the number of periods recommended is two, which in a normal load are those in which the pupil has been taking physical education and study. The dean, however, may alter this. For example, a pupil may be taking five subjects and may be a candidate for graduation in a few months, and there may be a necessity for him to remain in contact with each of his classes.

How Discharges Are Made

It is occasionally recommended that a pupil be placed in Room 35 for three or more periods. It is then necessary to assign him for a regular rest period in lieu of a recitation class. This is done by the dean, in consultation with the pupil, by deciding which one of his studies he can afford best to miss for a few days. The pupil, upon assignment to the room, remains there until discharged by the physician, who sees him at his next visit to the school and makes his recommendation. All such cases are, of course, considered in the health case conference, to the personnel of which has been added the Room 35 attendant during the time in which assignments or discharges

to the room are being considered. Thus the attendant keeps in direct contact with the discussion and decisions of this group relative to her charges.

The fall semester of 1931 is the first one for which we have complete statistics. In that semester the total number of assignments was 289, representing 110 different boys and 137 different girls.

Average Assignment Is for Two Periods

The incidence of illness determines, of course, the number of assignments to the room. Records kept by the school indicate that the peak assignment for each week usually is on Monday. A notable exception occurred on Friday, October 23, caused by recovery from colds, sore throats and bronchitis, re-entry into school having been delayed from the first of the week on account of rainy weather. The records show that a number of pupils were required to stay in the room for an extended period, one being assigned there for the entire term. It must be remembered that the ordinary assignment was for two periods only, the remainder of the school day being spent in classrooms. During the first three weeks eight pupils were assigned to Room 35, and these eight spent the remainder of the term there in physical education and study periods. Among the reasons for such long assignments were serious underweight, recovery from operations, injury from automobile accidents and heart conditions. In each case, whether the stay in the room was long or short, credit for physical education was allowed for the time so spent.

Changes in the number of pupils occupying this room from day to day were rather slight, although the average daily load by weeks accumulated to a number that represents almost the capacity of the room. The load ranged from one pupil the first day to seventy-nine pupils on December 14. Since the average assignment is two periods the average load per period on the latter date was twenty-seven pupils. The load on the room amounted to about twelve pupils per period for the semester.

A full period each day of basketball, boxing, wrestling, exercise and games is given boys in the fifth level of physical education. Sun bathing is included in each type of activity.

The distribution of the number of periods per day assigned to each pupil is shown in Table I.

Length of Stay Varies

The school has compiled a graph which shows the distribution of length of stay by days. The mode is found at one day, largely influenced by emergency one-day assignments. These are ordinarily of the following nature: A pupil is ill because of digestive disturbances or has had a slight accident, but does not wish to go home and miss his classes. He is then given a one-day assignment for one or two periods to Room 35 for complete rest or even sleep. A second mode

is found at five days. This would be the true mode were the one-day assignments excluded. The median of the distribution is at six days.

Twenty pupils were assigned to the room for thirty days or more during the semester. This number includes some who have serious heart conditions and who need to be guarded against overexertion, some who were extremely underweight, others who were the victims of serious accidents. An illustration of the last sort of adjustment, is a boy who seriously injured his knees six weeks before the end of the semester. Each school day he was brought by automobile to an entrance near Room 35, in which room he stayed the entire school day alternately studying, taking tests and resting. He was kept in contact with the school work through the room attendant, student teachers in the classes in which he was registered and the regular supervising teachers. He completed the work of the semester satisfactorily. For him it was a far better solution than remaining at home and trying to carry on his school work at a distance. Help was available when difficulties arose. There were social values in the room situation itself, and it was possible for him to meet and talk to his friends in the school. There were five cases of this nature during the semester.

TABLE I—DISTRIBUTION OF NUMBER OF PERIODS PER DAY ASSIGNED EACH PUPIL

Number of one period assignments	42
Number of two period assignments	195
Number of three period assignments	10
Number of four period assignments	1
Number of five period assignments	1
Number of six period assignments	2

TABLE II—DISTRIBUTION OF CAUSES OF ASSIGNMENT

Respiratory infection	170
Accidental injury	31
Strain	24
Infection	7
Recovery from operation	4
Digestive disturbance	3
Heart	3
Mumps	1
Measles	1
Lameness	1

Table II and Table III give the distribution of the causes of assignment to the room.

Within Room 35 and its annex, the court, a variety of activities are possible, from preparing lessons to sleeping. A visitor to the room would see some pupils sitting in deck chairs just resting or reading magazines, some studying, some obtaining help from student teachers, some in the court in deck chairs, some completely relaxed on couches. One of the first duties of the attendant was to study the activities in the room; later, on more complete acquaintance with the possibilities of the unit and more complete acquaintance with pupils, she was in a position to direct these activities. However, the atmosphere is not that of forced rest or forced sleep or forced study. A child is largely free to make his own decision as to how he uses his time. There have been instances, however, in which the attendant has been insistent on a pupil's resting when this seemed to be vital. During the last semester the types of activities that pupils should engage in have been under discussion at health case conference meetings.

In February of this year each of the two supporting associations agreed to give $800 for the support of the room. This will take care of the program for the school year 1932-33.

TABLE III—DISTRIBUTION OF CAUSES OF DAY ONLY ASSIGNMENT

Respiratory infection	28
Digestive disturbance	8
Strain	7
Headache	6
Accidental injury	4
Recovery from operation	1
Abdominal pain	1
Heart lesion	1
Infection	1

It is the belief of all who have worked with Room 35 in University High School that such a room fills an important need in any large city high school. The point might be raised that it would be better procedure to keep these pupils home until they are fully able to meet the demands of school life. Most of them, however, would be restless, particularly the more ambitious ones who are preparing for college. We have had from pupils themselves literally hundreds of expressions of appreciation for these adjustments to school life during convalescence. Needless to say, all the other adjustments in effect before this service was organized are being continued. Teachers are reminded that they should give pupils plenty of time to regain their places in class. Parents are advised to reduce home study and home work load. Upon release from the room boys or girls usually are started on one of the lower levels of physical education exercise, and then advanced until they are in complete normal physical condition and ready to take part in other activities.

Parents also have written a number of letters expressing their appreciation of the service of

Room 35. Quotations from some of these letters follow:

"Gordon was recovering from a severe cold and had he been obliged on his return to school to enter at once into all the school's activities, I should have felt compelled to keep him at home several days longer, but by having a rest period in a quiet room, he was enabled to return to school earlier and so caught up with his studies with less effort. Gordon says it is a pleasant room, well supervised, and I think it would be well to maintain such a room for pupils not quite up to par."

"I should like to state emphatically that if it had not been for the service of the convalescent room, my daughter, Lois, would not have been able to finish the year in school last spring. It was only after learning of the room and the way in which it was conducted that the doctor permitted her to return at all after her second case of influenza. Lois feels that the way in which the room was conducted made it much more beneficial to the recuperating pupils than the ordinary rest room would have been. We both wish to express our thanks for the establishment of the room, and hope that it may be continued."

"We are much gratified with the benefits Betty seemed to gain from her stay in the convalescent room last year and are counting on further use just now, as she is recovering from an appendix operation. I should hesitate to start her next Monday unless she could spend part of her time there."

Today's Necessities Are Yesterday's Luxuries

Not all high schools are as fortunate as University High School in the amount of health service provided. Not all could obtain grants which would equip such a room and provide the necessary service. However, much may be done with less money and less equipment. In any high school, provided a room can be spared, a start can be made by securing some of the needed equipment with the aid of the board of education, service organizations, or the Parent-Teachers' Association. It may be possible to rearrange the schedule to release an interested teacher for part time as an attendant.

Most of the auxiliary agencies of the schools which we consider as necessities today are the luxuries of yesterday. That is true not only of health service in general but also of provision for cafeterias and for transportation. If the value of such a room can be demonstrated in a community through small beginnings and through even a partial provision of its services, public support ought to bring a time when such provision for returning convalescents will be recognized as one of the responsibilities of the health service of the school.

Psychiatric Services for Children Show Steady Increase

Psychiatric clinics listed in the new Directory of Psychiatric Clinics in the United States number 674.

Two earlier editions of the directory—one in 1925 and one in 1928—listed 318 and 492 clinics, respectively. Since, in the new directory, there are listed some fifty clinics that serve adults exclusively, the net increase of clinics serving children is approximately 130. On these 674 clinics, 232 provide the threefold service of psychiatrist, psychologist and psychiatric social worker—an evidence of the remarkable growth of the movement and prophetic of increasing helpfulness in that phase of the guidance of youth that may be referred to as adjustment.

The directory was published by the Commonwealth Fund, New York City. The compilation was made by the division on community clinics, National Committee for Mental Hygiene.

Why Bidding for Teaching Posts May Harm Schools

The practice of school systems to invite bids for salaries in employing teachers, which, according to reports, is occurring in a few places, is "unsound and if extended widely will have a demoralizing influence on the teaching profession," Dr. William John Cooper, commissioner of education, emphasized in a recent statement.

Introduced as a method of reducing school costs in some rural areas, this policy of contracting with low bidders upsets all standard scales of salaries and works a hardship on both those employed and those who are seeking employment, Doctor Cooper said.

"To reduce salaries when it is necessary," he continued, "school authorities should make a survey of the reduction in the cost of living in individual communities and reduce salaries accordingly." If living costs have dropped 5 per cent, then it is not unfair to reduce teachers' salaries proportionately. On the other hand, if costs have fallen lower, then the proportion in salary reduction should be commensurate with decreased costs, he explained.

Continuing, Doctor Cooper pointed out that the scheme of bidding assumes all teachers are on an equality in service. This is not true. Inexperienced teachers or those lacking in the qualifications of high salaried ones would have a tendency to lower educational standards.

The Superintendent Practices Economy

Practical methods of economy in expenditures in all branches of the small city school system are suggested by the author of this article

By HARLIE GARVER, Superintendent of Schools, Union City, Ind.

IN spite of the implicit faith of the American people in universal education, there is a growing sentiment that our schools cost too much in proportion to the objectives attained. Many claim that we need to spend more not less, and to support that contention they point with an insistent finger to various fields in which schools could function with profit. Nevertheless, until we can prove the right to an expansive program in a more convincing manner than we have done thus far we must heed this cry for the conservation of public money.

It is a public duty of school administrators to render a maximum of service with a minimum expenditure of funds. Some suggestions in regard to economies in the average or small system are presented in this article. Many large systems are already working to this end, because they have available the funds and the staff with which to approach the matter systematically and scientifically.

Don't Guess in Making a Budget

The superintendent is the best informed citizen, often the only one informed, upon the subject of education costs. If expenditures are to be lowered he must point the way; if school taxes are to be reduced he must reduce them. Glenn Frank, president, University of Wisconsin, brings home this fact when he reminds us that education is as surely under the iron hand of the school administrator as medicine and law are within the grip of the physician and the attorney.

There is a world of difference between wise expenditure and extravagance. Business enterprises often discard obsolete methods with a resultant saving of many times the cost of the change. The same principle can be applied to education. Again, natural growth in school population must be taken care of. Talk of economy that disregards this factor would be futile. There are ways, however, in which costs can be reduced, and the only requirement is a will to save. A few hours spent in a study of facts often reveals many possibilities for economy.

Among certain devices and methods valuable in the accomplishment of this object is a carefully worked out budget. Merely setting down in round numbers the costs of various functions for the preceding year, with changes that are the result of guesswork, does not constitute making a budget. This instrument should consist of an exact schedule in detail, worked out on the basis of real anticipated expenditures, due allowance being made for contingencies.

To explain, in most school accounting systems there are perhaps ten accounts according to function, with from five to ten column headings in each account.

In preparing the budget it is well to list each account heading, with the column names beneath it. Then under each column should be listed the proposed expenditures for the year, such as Account E, maintenance; Column 5, repair and replacing of instructional apparatus as follows:

Cost of replacing typewriters,	$200
Repair and replacement, scientific apparatus,	150
Repair and replacement, shop and domestic science apparatus,	125
Repair and replacement, maps, etc.,	75
Repair and replacement, other equipment,	50
Unforeseen expenditures,	50
Total Column E-5,	$650

It is also highly desirable to indicate in a separate column a figure that will make it possible to compare this expenditure with that for the preceding year. A sum preceded by a plus or minus sign is a good device for this purpose.

Once the budget is established the next requirement is to keep within it, otherwise it means nothing but a half-hearted attempt to satisfy the law. This cannot be done, however, unless there is set

up a system of budget control that allows frequent and easy checking. A check after the bills are paid each month is good; setting down expenses as they are incurred is even better. A budget chart consisting of various account headings with columns for recording monthly expenditures, and with a separate column giving the budget limit for easy reference, is an excellent device for keeping the superintendent informed. Then when the limit of the budget is reached in a given item, no more money should be spent.

Know When to Buy

Another way in which funds may be conserved is in making plans for the year. At the close of school most superintendents obtain inventories and lists of needs from principals, department heads and teachers. This is a good time to emphasize the need for economy. Teachers, like all persons whose needs are supplied at public expense, find it easy to ask for equipment and supplies when they do not have to pay the bills. It will be found that when properly approached, the better class of teachers will cooperate gladly. After all, when differences in teaching requirements are considered, the best teachers are those who ask for the least.

After estimates of needs are obtained and the budgeted program is decided upon, the goods must be bought. Two factors are important here, obtaining prices and knowing when to buy. One of the most extravagant and unwarranted practices today is the promiscuous buying of the year's supplies through traveling representatives of school supply houses. This not only wastes time, but encourages the support of a group of middlemen we can well do without. One good way to discourage such callers is to refuse to give any orders except by mail.

Price quotations should be frequently obtained. Firms invariably quote prices that are lower than catalogue figures. Then, too, bargains often appear in unexpected places. Furthermore, when firms know they must compete they are more willing to go after the business and to render adequate service.

When to buy is also a factor. Two things should be avoided—first, buying when the article is known to be scarce, and second, buying for delivery in August, when school supply houses are running night and day. Supplies ordered for delivery at the seller's convenience are always cheaper. For the same reason rush orders of any article are to be avoided whenever possible.

In a choice between buying from a few houses or from many, one must decide in favor of the few, for a smaller number of invoices and accounts means larger orders, fewer accounting units and lower overhead to the firm, as well as similar advantages to the school, in addition to lower prices. I observed a striking illustration of this when I discovered that a few firms with which I have done business for many years are invariably low bidders when quotations are asked.

Another practice that will pay dividends is to take advantage of discounts for cash by arranging with the school trustees or the school committee for payment of such bills without waiting for the usual time for payment. Most trustees will see the good judgment of such a procedure. Another policy absolutely essential to economical buying is that this function should be performed by one person, preferably the superintendent, business manager or a member of the board. Deviation from this practice can result only in confusion and waste.

Insistence upon standard merchandise will eventually be an economy. For instance, school paper is made in a multitude of sizes and weights. Most school systems could order practically all their paper in either of two weights and in three or four sizes. Even in a small system this practice would result in fewer items, with a resultant advantage in price. Such simplification is in line with measures being adopted through the efforts of the United States Bureau of Standards.

Check These Points for Economy

Another valuable practice is to make use to the fullest possible extent of the business judgment of members of the board of education. Perhaps the greatest aid to this end is to supply the board members with the largest possible amount of information about what is proposed, tabulated in detail and arranged so as to permit them to render judgment in the limited time at their disposal. Facts in school affairs, as in other lines, are indispensable in the making of reliable decisions. With such information in their possession, board members can because of their greater range of experience often render assistance in the conduct of school business that will result in added economy. With correct procedures set up the logical question that follows is, "Where to save?"

In the list of functions in school accounting administration comes first. Because economy in school expenditures depends almost wholly upon proper administration, a mere cutting of the budget here is futile. The superintendent must be satisfied that the administration is functioning. Up to that point, expenditures are justified; beyond that point they are waste.

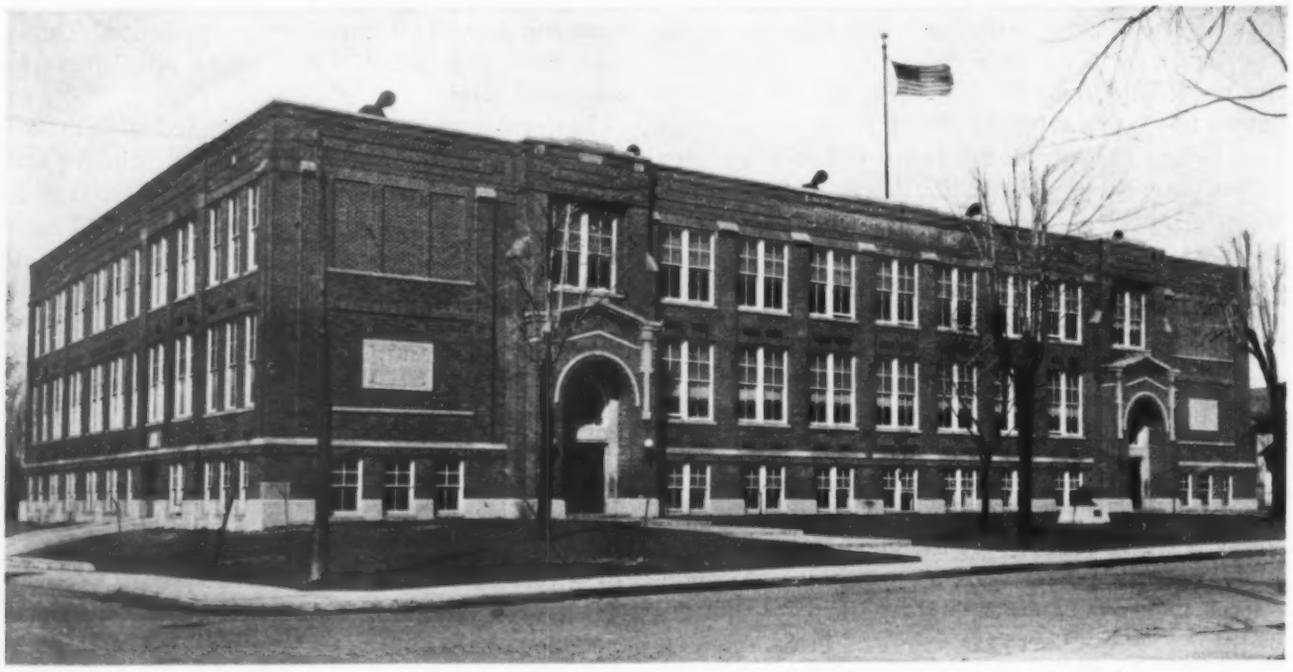
Generally speaking, efficient administration begins with an accurate system of bookkeeping, based

upon good accounting practice and following recognized school procedure. Several states now have such systems established by law. In states where such systems do not exist the books may be obtained from certain publishers, together with complete instructions for doing the work. No technical knowledge of bookkeeping is required, and small systems may operate just as economically as large ones.

Aside from the satisfaction and convenience of following a correct procedure, a recognized system of accounting makes possible the easy access to school costs, expressed according to accepted standards. Naturally, variations in practice occur. For instance, an item charged to coordinate activities in one system may be charged to supervision or administration in another, but in the majority of cases there is agreement in all essential details. Thus the superintendent may easily compute unit costs of education for different schools or functions, thereby throwing light upon undue variations from the average. Often this is the means of discovering inefficient help and even of abandoning obsolete equipment or buildings.

Research can often work wonders in the small school, which usually fails to engage in it because of the mistaken idea that it costs so much. For instance, research in a high school might reveal the cause of an unwarranted number of failures, and thus point to the remedy, with the possibility of reducing the teaching staff as a result. Furthermore, a rudimentary knowledge of the fundamental tool of research, namely, the statistical treatment of facts, may be made an effective instrument in the hands of the teachers and of the staff. Statistical treatment of actual data often serves to present facts in a manner much more convincing than when they are dealt with by any other method.

Present plant operation costs vary so widely that one is justified in concluding that some must be excessive. The foregoing remarks on buying can be aptly applied here, for there is special need today for more careful and systematic purchase of janitorial supplies. Especially is it true that standardization of methods and merchandise would do much toward decreasing operation costs. Nothing short of chemical analysis will render safe the purchase of liquid soaps in the competitive market. Again, the great number of grades and sizes of paper towels and toilet paper can have only one result, an inferior average product together with its running mate, high cost.



High School, Union City, Ind. An accurate appraisal cut the insurable value of this building from $200,000 to $167,400 and reduced the annual fire insurance premium from $552.38 to $465.76.

The janitor-engineer question is at last beginning to receive the attention it deserves. Two facts affect operation costs to a marked degree. One is the growing conviction that custodians, like teachers, need training for their duties. Janitor-engineer schools and the short courses on this subject now being offered by many state universities are proving of great worth. Custodians return to their schools with a more scientific knowledge of firing, of scrubbing and of their many other duties. Schools have often learned that the cost of sending these men to school is more than offset by the increase in their efficiency.

Another fact now gaining recognition is that the

all-year contract for custodians is the only wise policy. Generally speaking, a man can be hired for twelve months almost as cheaply as for the nine or ten months of the school session. Then in the ten or twelve weeks when school is not in session he can decorate the schoolroom walls, caulk the windows and doors and perform other equally profitable tasks. Difficulties with labor unions can usually be adjusted if they are approached in a tactful manner, for public opinion usually approves any honest attempt to reduce school costs.

Costs of the repair and replacement of buildings and equipment could be reduced materially if a carefully planned program were more generally followed. Two widely separated policies are in vogue, first, that of making sufficient repairs to keep the buildings and equipment in an efficient state, and, second, that of waiting for equipment to break or buildings to become obsolete before doing anything about it. To illustrate, it is obvious that it is cheaper to repair or resurface the roof when it first shows signs of wearing out rather than to wait until not only the roof, but the lath, the plaster and the furniture are damaged as a result of the neglect. Two principles are of paramount importance—regular inspection of the plant and the equipment and a budget providing for consistent and adequate expenditures for this purpose.

WHY YEAR-ROUND JANITORIAL SERVICE PAYS IN ONE YEAR AT UNION CITY, IND.

Estimated value of painting and other summer work on a contract basis	$1,213.50
Cost of paints and similar materials	404.50
Paint machine, etc. (10% of cost)	19.50
Miscellaneous expenses, power, etc.	20.00
Cost of yearly salaries over nine months	224.54
Total cost of maintenance work	$ 668.54
Saving to the school city	544.96

Prominent among fixed charges as a source of waste is that of insurance. Lack of a consistent policy based upon accurate valuations has cost school corporations millions of dollars. School buildings continue to burn, but many of them are either overinsured or underinsured, often at a rate that could be reduced materially under the correct procedure. It seems to be a reasonable obligation for school boards to insure the property of the public in such a way that it would be adequately protected in case of loss, and at a cost that would not be excessive.

Probably the greatest obstacle to good insurance procedure is ignorance of school property values. Often the amount of insurance is determined merely by an estimate in round figures of the cost of replacement. Sometimes insurance is the result of pure guesswork, a poor substitute for accurate figures when millions of dollars worth of property is concerned.

Accurate appraisals of buildings and equipment, brought up to date at least every three years, are an absolute necessity for a sound insurance procedure. Only by this method can school authorities know when the property is being fully protected. Such appraisals are often made by reliable firms engaged regularly in such activities, although many school systems do this work themselves. The latter method is of course cheaper and often gives results just as satisfactory as the other. In this case it is essential to make use of the advice of reliable architects and contractors in obtaining estimates of costs.

Depreciation naturally figures prominently in these estimates, and it will be found a good procedure to consider three important points in figuring depreciation. The useful life of the building is of fundamental importance. For instance, assuming that the average building lasts fifty years, a building twenty-five years old should have a depreciation of 50 per cent on that basis. Again the condition or state of repair is an important factor, because a building twenty-five years old may be in perfect repair, and newly painted and decorated. Naturally, this adds to the value of the building, thus lessening the depreciation. A third factor is obsolescence. Nearly new things often become worthless simply because they are out of date, and building values are affected by the same principle. These three factors form the usual basis for figuring depreciation, although the percentages allocated to them vary to some extent.

Auxiliary Activities Should Be Watched

Appraisals are of extreme importance to those school corporations that insure under the co-insurance clause, a much used but little understood practice. Briefly stated, this clause provides that when the insured fails to carry the proportionate property value in insurance, which he agrees to do in order to obtain a lower rate, then in case of loss he becomes a co-insurer with the company, and the latter becomes responsible only for the proportion of the loss which the amount of the insurance bears to the specified percentage, based upon actual values at the time of the loss. Needless to say, failure to carry out the school's part of such a contract might result in an enormous loss of insurance should the insurer choose to go to court and compel officials to prove their claim. Naturally, an accurate appraisal usually assures an early settlement, free from legal difficulties.

To render effective a program of economy in

coordinate activities it is necessary to distinguish carefully between desirable functioning activities and those some are pleased to call fads and frills. For instance, there is usually little objection to a health program that is kept within reasonable bounds and that functions as auxiliary to the home, the family physician and organized hospital and recreational facilities. There is, however, good ground for doubt that it is a function of the educational institution to displace all health agencies, thus turning the school into a combined clinic, hospital and recreational center.

Is it not reasonable to inquire whether this does not go too far? Perhaps some current writers are at least partly right when they contend that school authorities are usurping the functions belonging to the home. Another abuse in connection with auxiliary activities is that schools are coming more and more under the control of autocratic educational bureaus which insist upon certain expenditures, for example, so much per pupil for library books. Needless to say this is a practice that should be discouraged, for a school that is amply equipped does not need to spend money for further equipment.

More Careful Planning Is Needed

Buildings are often equipped in a wasteful manner. Here again there should be strict adherence to standard equipment, with a minimum of sizes, styles and finishes in instructional apparatus and furniture.

When toilet and towel fixtures, window shades, map cases, cupboards, bookcases, desks and tables are uniform throughout the system, a great saving can be effected in the purchase of supplies and in replacement. This policy also facilitates the exchange of equipment between buildings, an important factor.

School buildings themselves are prolific sources of waste. A few instances of waste and extravagance are the steep gable roof, an excessive amount of terra cotta and stone trim, special sizes and styles of interior trim and fittings, poor utilization of floor space, inaccessible plumbing, inflexible electric circuits and building plans that will not meet changing conditions or expansions.

Naturally, the solution of the problem is more careful planning, which involves making use of the most competent advice on the subject. Examples of valuable sources of information are the report of the National Education Association's committee on schoolhouse planning and the activities of the National Advisory Council on School Building Problems recently organized under the auspices of the United States Office of Education.

Of course the burden of obtaining information and of properly presenting it must fall upon the superintendent. He may be anxious to have an economical administration, and he may be well acquainted with the facts and sources of information, but if he cannot sell these ideas to his teachers and to his board of education and, most important of all, to the parents of his pupils he is helpless.

Economy in the expenditure of public funds is difficult in these wasteful times, but it can be accomplished if we are willing to make the necessary effort and sacrifice.

"No Salary Reduction for Teachers" Say More Than 600 Cities

More than 600 cities in the United States will either increase teachers' salaries or maintain last year's schedule during the coming year, according to information sent out by the National Education Association. The information was obtained in answer to a questionnaire sent out on March 30, 1932, from association headquarters. Since the replies are continuing to come in, it is expected that the figure will be much higher.

On this list are five cities in Alabama; two in Arkansas; thirty-three in California; five in Colorado; forty-two in Connecticut; seven in Florida; six in Georgia; three in Idaho; nineteen in Illinois; eleven in Indiana; five in Iowa; seven in Kentucky; three in Louisiana; twelve in Maine; nine in Maryland; fifty-eight in Massachusetts; seven in Michigan; ten in Minnesota; three in Mississippi; three in Missouri; three in Montana; one in Nebraska; two in Nevada; five in New Hampshire; eighty-five in New Jersey; two in New Mexico; ninety-four in New York; seventeen in North Carolina; two in North Dakota; twenty-four in Ohio; eight in Oklahoma; two in Oregon; ninety-four in Pennsylvania; four in Rhode Island; five in South Dakota; four in Tennessee; nineteen in Texas; three in Vermont; eight in Virginia; four in West Virginia; two in Washington; eighteen in Wisconsin; two in Wyoming.

The following larger cities are among those listed: Birmingham, Ala.; Oakland and San Bernardino, Calif.; Denver, Colo.; Hartford and Stamford, Conn.; Wilmington, Del.; Jacksonville, Fla.; Chicago; Evansville and Indianapolis, Ind.; Lexington, Ky.; Bangor, Me.; Fall River, Holyoke and Springfield, Mass.; Bayonne, East Orange, Elizabeth, Jersey City, Montclair, Newark, and New Brunswick, N. J.; Albany, Ithaca, Middletown and New York City, N. Y.; Philadelphia, Pittsburgh, Scranton, Wilkes-Barre and Williamsport, Pa.; Pawtucket, R. I.; Memphis, Tenn.

How One Michigan County Cares for Its Mentally Retarded Children

The new educational building of the Wayne County Training School embodies features that should promote the best physical, mental and social development of which the pupils are capable

By NATHANIEL O. GOULD, Architect, Detroit

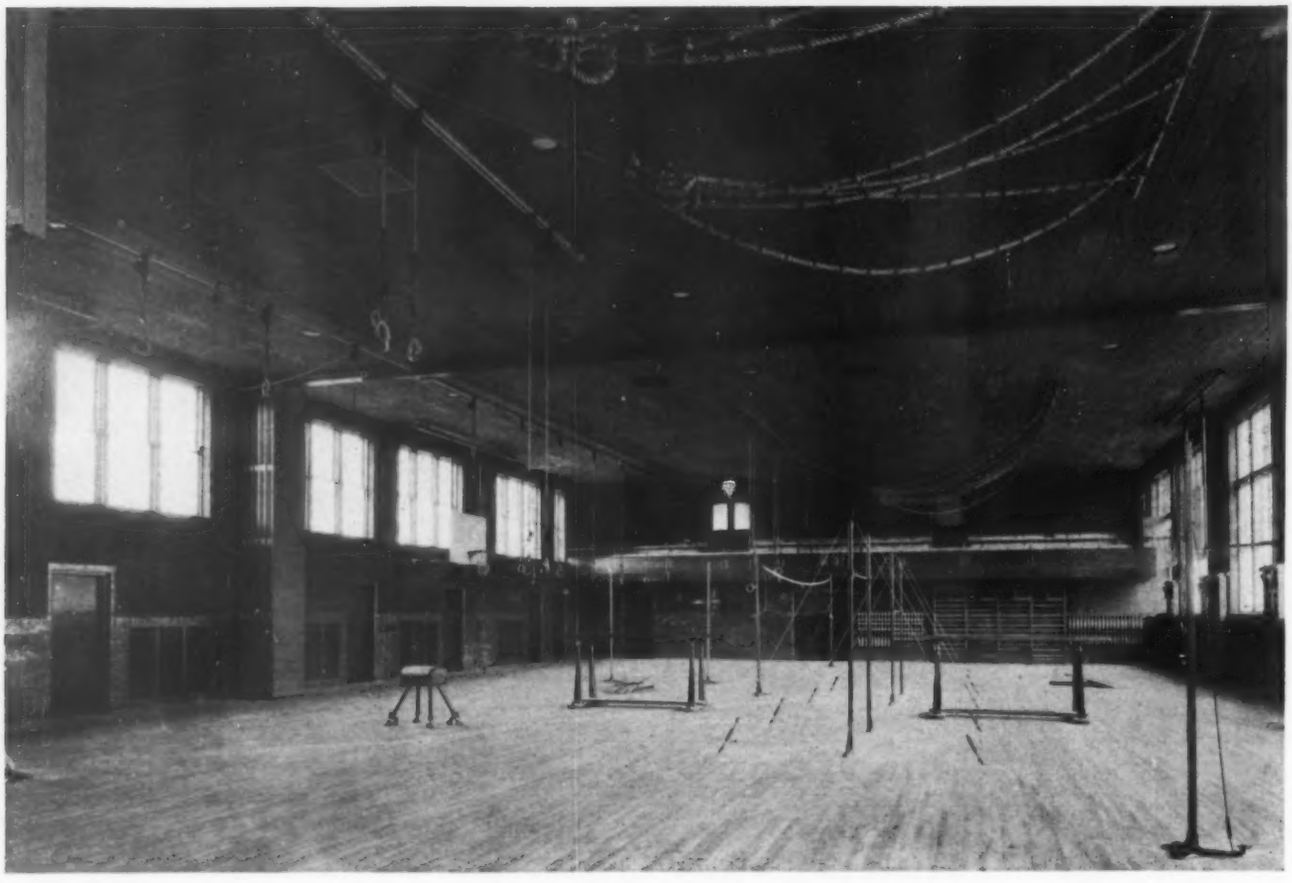
THE new school building of the Wayne County Training School, Northville, Mich., provides the basis for the educational training in an institution which cares for the mentally deficient children of the county.

The school is a home community complete in itself. It is made up of some thirty buildings which provide living quarters, vocational training, recreation and employment for the children and for those who are in charge of their training. As the need for each new building arose, it was planned and developed.

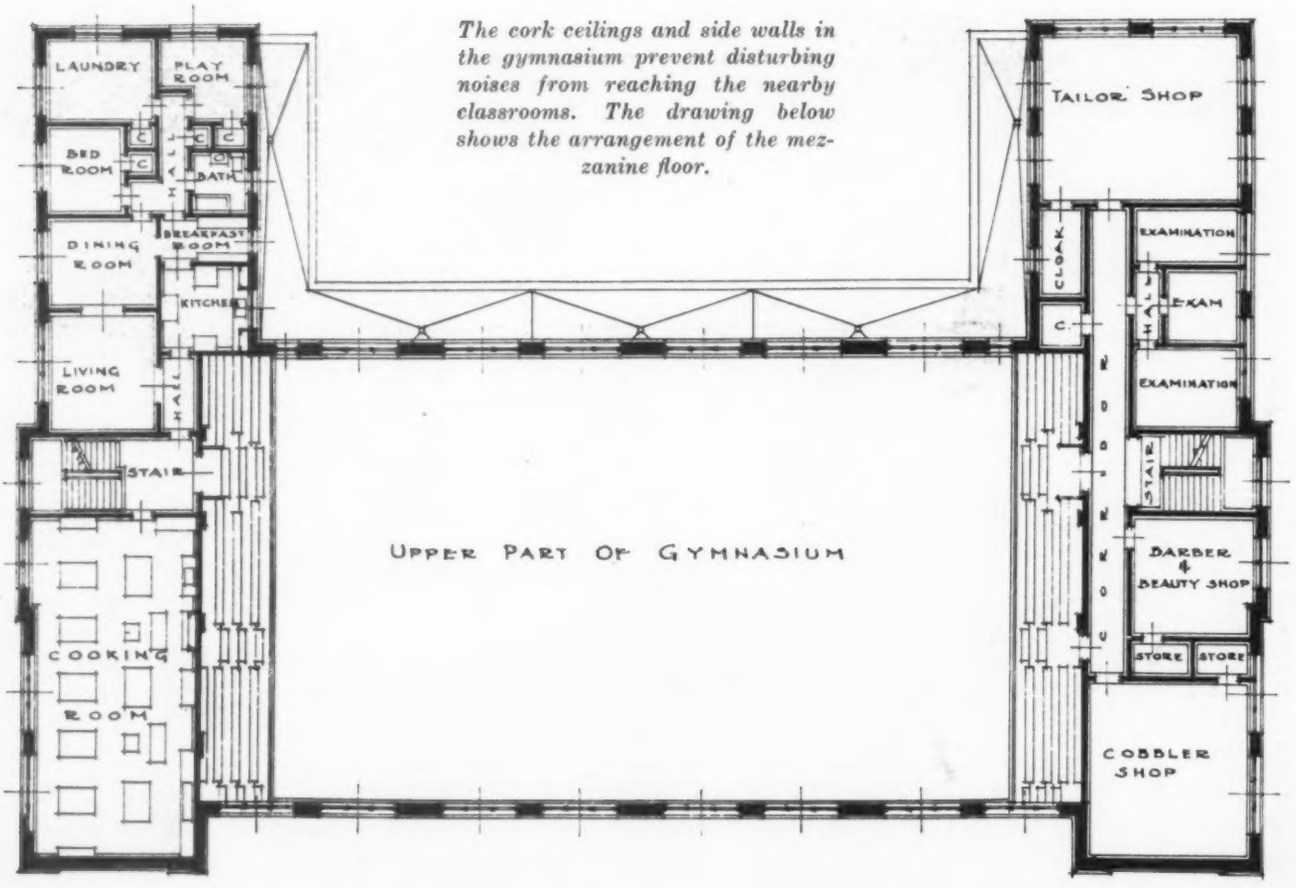
The construction of the school building was delayed until the training needs and demands of these children could be studied and then properly planned for. This has led to some novel ideas which, when put into effect in the actual building, have carried it beyond the bounds of conventional school planning. This is brought out in the following description by Dr. Robert H. Haskell, superintendent of the institution.

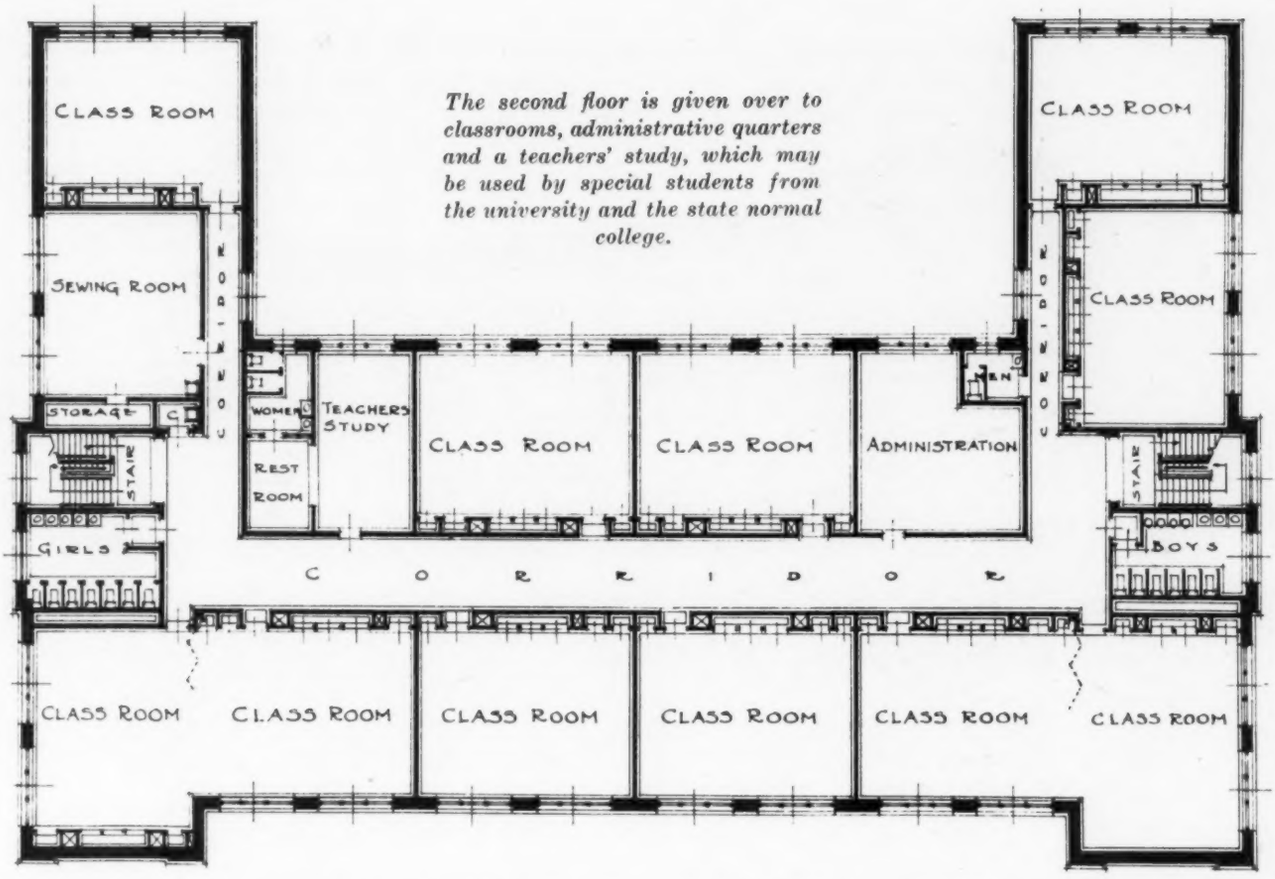
In the planning of this particular school building, the problem was not merely the designing of another school building to meet the traditional schooling demands of so many children in such and such grades of an ordinary community. The community that this school must serve is made up of an ultimate total of around 1,200 mentally retarded

The kindergarten in the Wayne County Training School.



The cork ceilings and side walls in the gymnasium prevent disturbing noises from reaching the nearby classrooms. The drawing below shows the arrangement of the mezzanine floor.





The second floor is given over to classrooms, administrative quarters and a teachers' study, which may be used by special students from the university and the state normal college.

children of moron level. These are all children that in some fashion or other have succumbed before the increasing difficulties of growing up in one of the most rapidly increasing county populations of America. Whether they are to become more or less permanent residents in some type of institution depends upon how satisfactorily salvage work can be done. To that end, these children, after the open community has exhausted all other reasonable means of helping them, are brought together in the county training school.

Since the academic achievements of the mentally retarded child are inevitably restricted in scope and extent, the big job of the institution is one of socialization. Those in charge are encouraged by the knowledge that such a child offers prospects of trainability in manual tasks equal to those of the normal child. Since this handicapped type of individual must depend on his physical capacity and ability rather than on intellectual attainments, a well coordinated muscular organization is of the utmost importance. For this reason, unusually abundant facilities for modern health education and all that that term implies were included in the building plans for the new school. Even more important is the need for training the mentally retarded child to utilize his leisure time to the best advantage. To accomplish this, every reasonable provision was made in the new building.

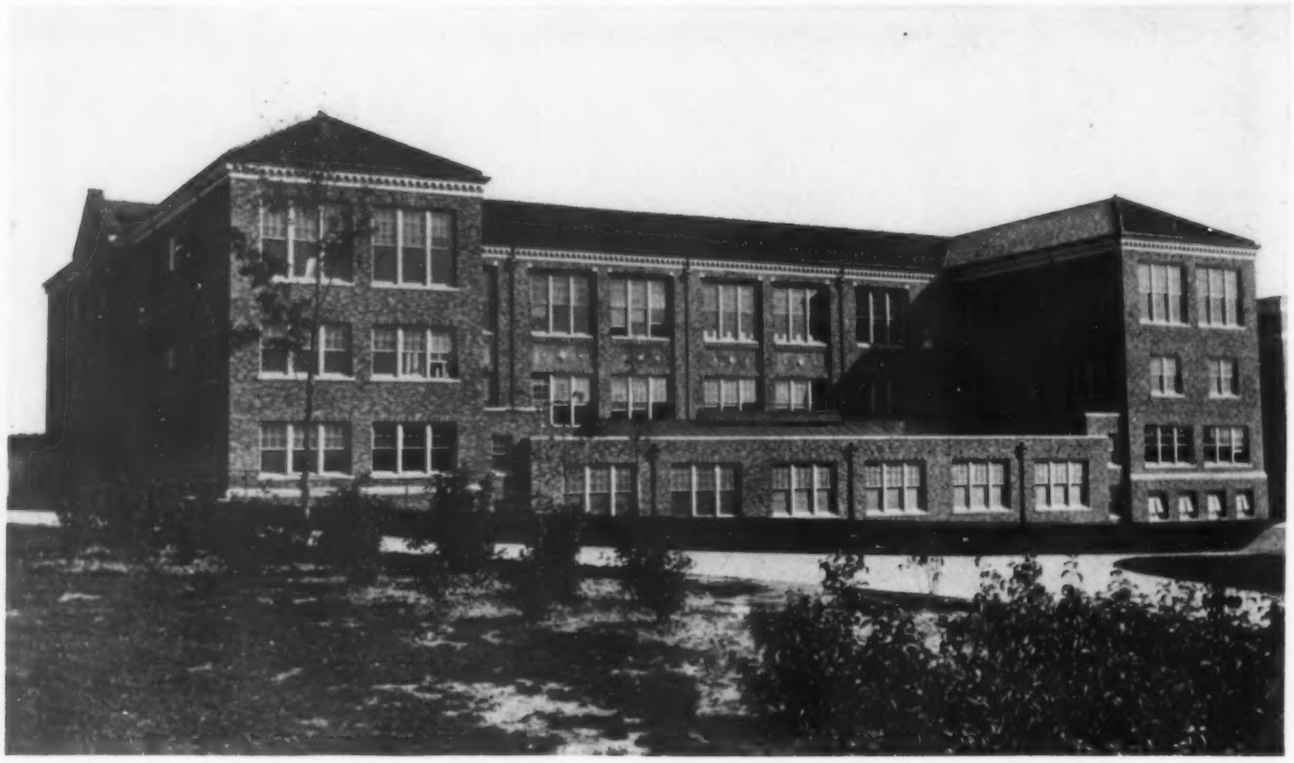
It must be kept in mind that a building for boys' manual training and an auditorium, together with a small undifferentiated school building of ten small classrooms, were already in use. An attractive portico permits these three structures to be joined as one functional unit.

All children under sixteen years of age attend school for five and a half hours a day, five days a week. The day is split up into four periods. The child has two so-called academic and two handwork classes each day. This requires the boys to move from this central school to the manual training building through the portico. The classes are smaller than in the traditional schoolroom, but experience has shown the advantage of retaining the same size of room, particularly with the increasing popularity of project method teaching and with a larger number of groups coming to the same room.

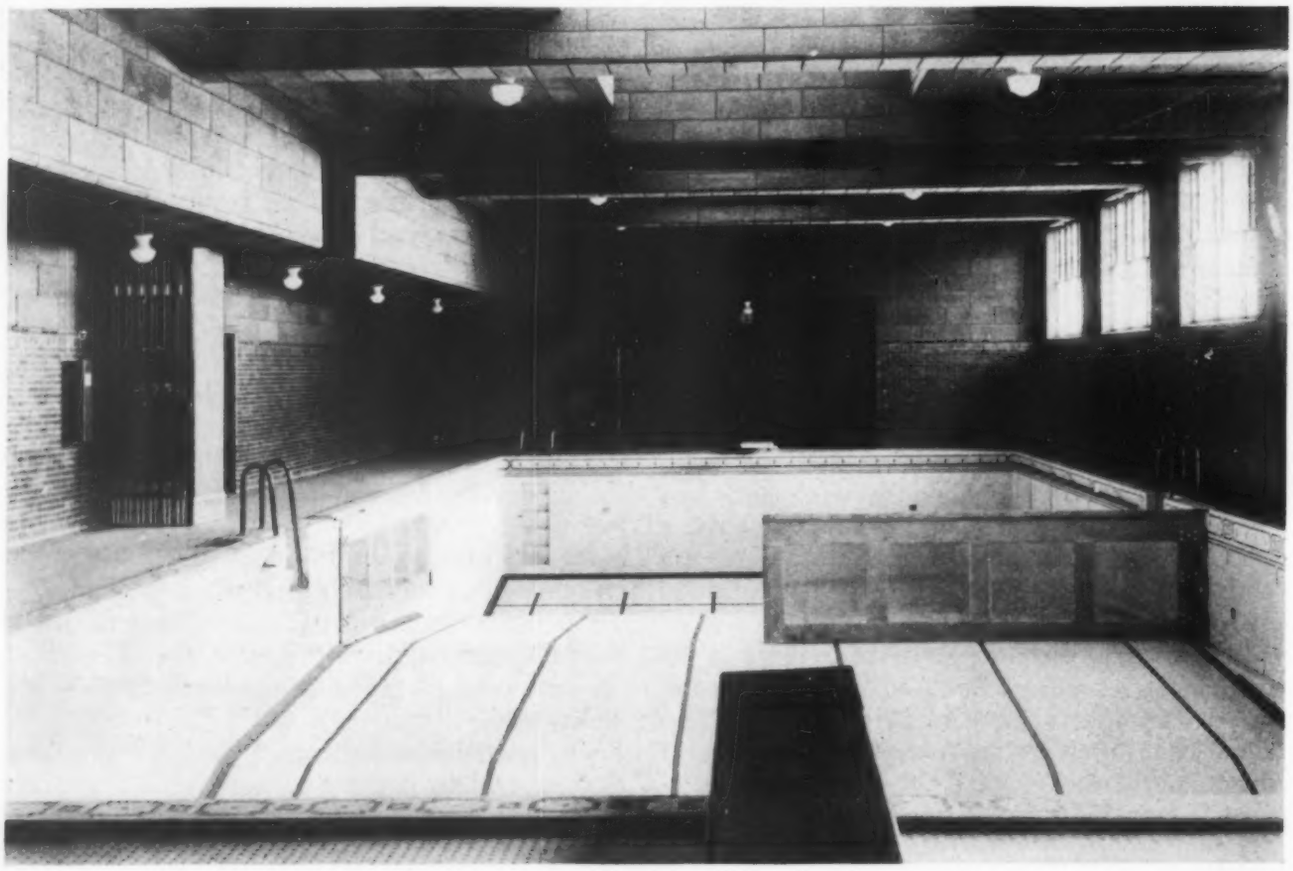
From all of these academic and handwork groups throughout the day children of homogeneous physical capacity are drawn in varying numbers to make workable groups in the gymnasium, the swimming pool and the adjacent playground.

With this outline of the general orientation of the particular requirements for this school in mind, the details of its planning can be the more easily understood.

The ground floor is almost entirely given over to physical training and the social program. The double gymnasium and the swimming pool are in use as much outside of regular school hours and on



The west elevation of the new building of the Wayne County Training School is shown above. The swimming pool (below) has a double swinging gate in the middle with a movable partition above so that the pool may be divided into two sections.



Saturdays and holidays as they are during the school day. It was important, therefore, that they should be easily accessible from outside the building and from the classrooms, both the academic and the handwork. Freedom for the pupils to play without interrupting the activities of the classrooms close at hand necessitated serious attention to sound absorption. The cork ceilings and side walls provide for this. The results from the sound absorption treatment both here and in the swimming pool have been excellent. Again, local demands led to unusual locking arrangements so that overhead apparatus cannot be put into use without the instructor's consent. Bleachers and some small apparatus are conveniently stored in a space over one side of the pool. The two rooms for postural treatment adjacent to the gymnasium floor were planned to serve also as children's club headquarters.

The swimming pool, the locker and the shower rooms are on a lower level. The runway with the graduated spray in the shower room is invaluable since groups must follow one another so closely. The pool is a little unconventional, but here again the design was dictated by local demands. The double swinging aluminum gate in the middle with the movable partition above allows the big pool to be made into two smaller pools with wading depths toward the gate.

The ground floor library is not a school library alone but a community library. Each child in school has the opportunity to go during class periods while the older children may come during the evening hours. Useful library interests can be cultivated even on this level. Book service is provided by the Wayne County Library Commission. The kindergarten is on this floor at the girls' entrance. Tile fireplaces in the kindergarten and in the library illustrate the spirit of the rooms and give them a distinctly esthetic appeal.

The auditorium, while not actually within the school building, is entered through the portico and is as freely utilized from the classrooms as if it were actually incorporated in the same structure. Plays and pageantry offer so much in the socializing program for this type of child that any excessive provision of facilities here can hardly be imagined. Sound distribution and talking picture equipment are provided as well as adequate scenery and electrical effects.

The classrooms, which are equipped with movable seats, are sufficiently large so that the children can be separated during recitation. Project tables are provided for the various groups.

The academic classrooms are on the upper floor. There are no fixed seats. Plenty of room is provided so that even within these rooms where homogeneous grouping has determined what children shall be in a given classroom, they can be still further separated in their recitative work and grouped according to their several capacities. Project tables are provided so that work begun by a group

can continue undisturbed until it is completed. Cork pinning boards on all sides of the room are abundantly supplied and are in constant use.

The administrative office of the educational department adjoins the classrooms on this floor. The abundant study room space adjacent to the teachers' rest room provides for special students from the university and the state normal college. It is hoped that these students can be attracted in increasing numbers to the school to supplement their theoretical preparation for teaching in this particular branch of special education.

Another specialized local requirement is found on the mezzanine at the girls' end of the building. This is a model apartment of five rooms, laundry and bath. The number of girls that can be given the opportunity of learning household methods in the employees' homes must always be limited, but in this model apartment every girl passing through the school department has a chance not only to learn all household operations under private household conditions but to apply to actual household activities the classroom knowledge she has acquired, such as arithmetic, reading and sewing. The cooking classroom is on the same floor.

On the mezzanine floor at the boys' end of the building are the shoeshop and the tailor shop. This arrangement, however, is only temporary pending the erection of an institutional workshop where all trade activities will be housed in one building planned so that the children may gain the utmost in training value from these activities. The three quiet rooms off the secondary corridor on this level are planned to provide interviewing space for university students engaged in graduate work here.

New Fire Alarm Is Versatile —Even Talks

A fire alarm that avoids alarming anybody is a recent much talked about invention. The alarm is unique in that it automatically detects a fire and then forces the fire to announce itself in a human voice which calmly warns people, instructs them how to leave a building and starts a band playing to help them march out quietly. Besides the unusual technical features of the apparatus, the use of a voice and a band instead of the traditional fire gong is based on the findings of modern psychology as to the way people react both to emergencies and to different kinds of sound.

By means of electrical devices, the system combines an automatic fire detector with a music reproducer which is connected to loudspeakers. The apparatus works as follows: When a small flame is placed near the fire detector, the detector responds in three ways a few seconds later. It sends an alarm straight to the fire house, directing the firemen to the side of the building nearest the fire, while in front of the building itself an arrangement of lights shows them in what particular part of it the fire is located. At the same instant, the music reproducer begins playing and is heard over loudspeakers. Third, green arrows light up, pointing out the correct route for exit.

The record that may be designed for use in a school begins with a flare of trumpets, followed by a distant siren. Then a calm but commanding voice says: "There is a fire emergency but no immediate danger. You must leave the building. You are drilled in this and know just what to do. Leave your hats and coats, take your places in line. Steady now, don't rush. Follow the green arrows." A brass band strikes up a martial air and the sound of approaching sirens is heard through the music.

Everything in the record has a definite purpose. The band piece was chosen for its strong marching rhythm. The siren is injected to accustom the children to it in drill so that they will not be frightened when they hear the real thing for the first time. Fire chiefs recommended the command to abandon hats and coats, as experience shows they are likely to be dropped, causing others in the line to stumble.

Special Wiring Is Used

The automatic fire detector uses special wiring which is sensitive to heat. The core is a fusible alloy enclosed in a steel sheath which is slit along its entire length. At 160° F. the alloy melts and expands forcibly. It spurts through the slit and, making contact with an outer metal sheath, causes a short circuit that sets off the alarm. In actual installation, this wiring is placed through a building and a very small current, enough to spring the alarm, is kept flowing through it.

The music reproducer is associated with an amplifier that may be connected to loudspeakers of any size placed in any number of rooms, hallways and auditoriums. The apparatus is "electrically supervised." A small current, about equal to that consumed by an ordinary 60-watt electric light bulb, keeps the amplifier tubes warm and ready to operate instantly, and also notifies the local technician should the slightest misadjustment occur. All the vital apparatus in the system is protected in a fireproof vault.

The automatic fire detector employing the more familiar types of alarm has been in use for some time. The first installation was made in 1927 in the George Washington home in Mount Vernon.

The Rural School—A Field for Enriching Life's Values

By ERNEST BURNHAM, Department of Rural Education, Western State Teachers College, Kalamazoo, Mich.

This department of rural education is conducted by Helen Heffernan, chief, division of rural education, state department of education for California, Sacramento.

RURAL education means the education of those who live in communities in which the hamlet, village or small town center does not exceed 2,500 persons. This is the United States Census distinction between rural and urban populations. This differentiation is subject to correction in certain cases, since some places with a population of less than 2,500 are quite urban, and many places of more than 2,500 are in specific characteristics quite rural. Rural and urban communities merge, with only arbitrarily fixed boundaries.

Public education is the major factor in the program of democracy. Democracy has a program and a faith. Both the program and the faith are being severely tested just now, but American faith in democracy persists. Every added item of time, teaching, learning and experience, whether personal or social, further fortifies democracy. Education is the lifeblood of democracy.

Economy is a word to conjure with this year. Not blind economy but informed, studied and steady economy is needed to safeguard the present and ensure the future of public education. In emergencies resources are painstakingly reviewed. In this paper I shall attempt to give a recapitulation of the public agencies that affect rural education.

A Prerequisite to Self-Respect

The state's program for progress in rural education has been enriched in every period of economic well-being, and the ravages of hard times have been valiantly withstood. Happily in the present period of stress the variety and inclusiveness of agencies and funds that wholly or in part serve rural education are matters of pride to all.

Elementary and high schools, colleges and universities are the centers where masses of citizens from a tender age to maturity gather for the acquisition of knowledge. Schooling, as a prerequisite to self-respect, has broadened in range with every succeeding generation. The increase in the number of school buildings is evidence of this and schooling has almost become a synonym for education.

The Public School Goal

Schooling is a present and future means to an education, and the primary value of schooling to an American citizen is measured by the facilities it provides and the determination of purpose it engenders for a lifelong acquisition of education. Schooling is the foundation and education is in a sense a superstructure erected by experience, travel, reading and social intercourse upon the foundation provided by schooling. Like all superstructures, its balance and stability are largely predetermined by the foundation.

It is because of this fact that institutional and instructional provisions for public schooling have been provided with unparalleled liberality in America. Now not only primary schools but also high schools have become the common schools of the country, and when through just distribution of taxation and improvement in the quality of teaching personnel, children living in the most remote rural areas and children from highly congested urban districts, have an opportunity to receive as good schooling as children in areas more easily dealt with, the public school dream of this generation will become a reality.

In contrast to the urban centers of population, where grouping is more fully determined by special interests, the grouping in rural districts is of necessity largely determined by accessibility of location and availability of adequate numbers in

population. Here lies a distinct value in the rearing of rural children, since in many group activities the measure of success is found in the active participation of all the people in the community, without too definite differentiation because of age, sex, culture or financial status.

The unified rural elementary school and the less differentiated courses of study in rural high schools must make more possible that sense of the unity of life that is the goal of lifetime education. The rural community, though less diversified and simpler than the city, is in major fundamentals complete.

Organizations such as the National Congress of Parents and Teachers, must in view of the necessities of the social situation in rural life have interested and active relations with the whole life of the community. Primary interest in services relating to the home and the school must not exclude interest in government and religion, which with home and school constitute the framework that supports the structure of civilization. Partisan and sectarian bias, as well as the assumption of superiority by any vocational or professional person or group, is dangerous.

Granted that education means the gradual but continuous realization of potentialities in individuals and in communities, then I submit that the small, not too small, community at its best affords an excellent place for the development of such a program.

Opportunities for Development Are Numerous

The present economic condition, which has shocked working morale and has made it necessary temporarily to slow up specific enterprises, suggests that it may be well for us to look further afield and by every available means seek to clarify our thinking about education.

Since more money cannot be spent just now, the present personnel and facilities should be utilized to the limit. I refer here to supplementary agencies, such as local persons who have had unusual experiences and local natural features and products or assembled curios. Village communities and the districts about consolidated schools afford an opportunity for development along the lines mentioned.

Club work, music, athletics, graduation exercises, health work, nutrition, clinics, speaking contests, junior and senior Red Cross societies, antituberculosis campaigns, home demonstration and county farm agents, and in some localities county Y. W. C. A.'s and Y. M. C. A.'s are county and community agencies that may well be utilized. The county and local libraries may be used for reading opportunity and direction. Voluntary organizations, such as granges, farmers' clubs and farmers' unions offer occasional programs of direct educational value. Libraries in county seats may be utilized for a small fee, and on specific inquiry the state libraries will make useful loans.

Education for adults by means of lectures, demonstrations, conferences and specific local surveys of educational equipment is provided in some cases by the state university and the state teachers' colleges, and expenses are borne by the state institutions providing the service. The state department of public instruction is always available for advice on legal questions, building plans for new construction and repairs, and for supervisory help in problems of instruction.

Public Needs Educational Aids

The biennial report of the state conservation department is a rich source of material for school and community study. This book according to a reliable source is not known to over 5 per cent of the public and is not used by over 2 per cent of the people in some states. Several state institutions offer correspondence and class extension services for small fees. The great campus meetings for youths and adults occasionally held by the university and the teachers' colleges offer splendid means of rejuvenating intellectual interests.

National departments of government have valuable free publications. Voluntary organizations of teachers and farmers, the American Library Association and the National Society for the Study of Education have excellent publications that present results of studies in rural education. Several of the great endowed research and service foundations have reports ready on specific studies in rural education and health.

Demonstrations in consolidated schools and other constructive community projects are being financed in part in several communities by wealthy citizens, and there are large endowed information bureaus that place the results of research within the reach of the public.

Obviously this is the time for state and national education offices and for national education associations, notably the National Congress of Parents and Teachers, to make available at the least possible expense lists of supplementary educational aids. These lists should be critically classified, annotated specifically for home and school use and distributed to the public.

Education, a lifelong adventure, anticipates the correlation of all life's values. This anticipation may well have its greatest vitality in rural life. Now is the time to lift up our eyes to this vision through schools, homes, business, government and religion.

Preparing for the Coming Battle for Tax Reduction

How to keep schools at the same high standard of efficiency on a greatly diminished income offers a challenge to educators; practical ways of doing this are suggested here

By J. FLINT WALLER, Trenton, N. J.

THE railroads of New Jersey last year fired the first gun in the "Battle for Tax Reduction." They asked for a decrease of some three million dollars. Other groups will follow suit.

What does this mean to the schools of the state? Two things it means, at least: (1) that while the schools must and will continue to serve more pupils in more ways with a higher quality of service, they will not have a proportionate increase in funds; (2) that the disproportion will be greater unless the taxpayers are accurately informed about school services and costs.

Providing Increased Efficiency at Less Cost

Let us consider the first of these two. Can the schools increase efficiency and reduce costs? The railroads of the country have for several years been eliminating waste and getting relatively more net profit from a smaller gross business. Research into school costs in New Jersey has revealed that considerable improvement in efficiency is possible as well as some saving in costs. These two can enable the schools of the state to continue to increase the quantity and quality of its services and yet do so on less money.

Here and there are easily discernible wastes in the purchase and use of coal, of supplies, of services of janitors and teachers, of buildings, of administrative and supervisory service, in the organization of school districts, in unnecessary schools, in a failure to modernize the curriculum. If these are to be corrected to any appreciable degree, an active leadership of the school is necessary.

School leaders have a challenge to meet. They must put their own houses in order by giving better schools for relatively less money, which means vigorously eliminating waste. They must show the citizens the needless cost of faulty organization, such as the multiplicity of small districts and of small high schools geographically near enough for combination.

How can school leaders increase efficiency and reduce costs? Five ways are suggested here:

1. By studying the needs of the youths and adults to be served and by meeting these needs directly.

2. By eliminating the "luxuries" of the educational program, such as small classes that are not really necessary to provide adequately for important individual needs, by offering many small class subjects during alternate years and by reducing the number of pupils who may elect subjects they are practically sure to fail in or do not need.

3. By pooling their resources. A part-time exchange between schools of teachers of special subjects will enrich the offerings without added cost. They may further reduce costs by the use of a part-time teacher instead of a full-time teacher. The specialization of near-by schools will also aid in giving better training and in reducing duplicate offerings to small classes.

4. By eliminating the padding in many courses, thus cutting them down to a more effective length, many subjects that have been spread out over two semesters may easily be given in one semester.

Individualizing Instruction

5. By training teachers of small classes to handle more than one course at a time by the laboratory method and by the use of projects suited to the interest and ability of the pupil or group. I know of one teacher of drawing who had in her room at one time pupils in all four years of high school. She was attending to four courses at once. She even went further and differentiated the courses to suit the individual needs of the pupils. Although this occurred in a school of a thousand pupils, the method is admirably suited to small high schools. We must recover from the hallucination that unless the teacher is in front of her class

all the time the class is not a class and cannot receive credit.

If we are to have as much or more money for schools the taxpayers must be reassured that the money is being used to the best advantage and that the results are important enough to warrant the relatively larger part of their reduced earnings. There is nothing sacred about the present expenditures for schools They may or may not be justified.

School men must search out the values in their products, and the waste. We know that in too many respects the results are open to question. The service must be of demonstrable value, and the citizens have a right to demand that its value be actually demonstrated.

This necessitates better schools—schools with less dead material; schools that effectively prepare their pupils to understand matters of government, economics, business, crime prevention, health betterment and personal adjustment.

Education has been a fetish in America. We have strongly believed in the educational panacea. But "that glorious feeling" may not last. It will be subjected to the realism of searching questions and disbelief.

Education becomes of more appreciable value not merely by a closer attention to vocational preparation, but by the development of interests that give zest to vocation and avocation. It is our tool in tackling and solving difficult problems; in developing appreciations and attitudes that make our lives richer, broader, fuller and that help us to work and play pleasantly and effectively with our fellows.

The Superintendents' Responsibility

The taxpayers should not support schools so liberally unless the money is better used for education than in other ways. On the other hand, a thousand dollars of public money spent to send a child through the public schools will be well spent if it prevents his becoming a state ward at a much greater cost.

It is true that, in general, educated persons have higher standards of living, greater earning capacity, and are better customers than uneducated persons. But, of course, there is a limit to this somewhere. That is where the argument starts.

We have said that the taxpayers will support only as much public education as they believe is a good investment for them in relation to their other demands and their ability to pay. A program of demonstration, information and contacts is necessary if they are to know what support the schools merit. They are not going to find out accidentally or casually. Nor will they take the initiative in finding out. They are too busy with other matters.

The Problem of the Large City High Schools

Large American city high schools have introduced a serious educational problem because of their great size, E. M. Foster, chief of the division of statistics of the United States Office of Education, has stated in calling attention to the fact that there are thirty high schools which now have an enrollment of 5,000 or more pupils.

Fourteen city high schools have more than 6,000 pupils enrolled, of which five have enrollments in excess of 8,000, he said.

New York City has the largest high school, and in separate enrollments, it leads all American cities. The De Witt Clinton High School there has an enrollment of 10,059 boys. Separate schools in New York, Chicago, San Francisco, Indianapolis, and Jersey City, have more than 5,000 pupils.

For and Against the Large School

The large school has much the same advantages and disadvantages as has the large university or college. Where there are greater numbers, facilities can be introduced and made available which often are impossible where enrollments are smaller. On the other hand, pupils tend to become regimented, to lose their identity and to suffer serious handicaps in their contacts with each other and with their instructors. Pupils as individuals tend to become more remote from the teacher in the large schools.

This lack of contacts makes it more difficult for the educational system to find out the abilities, aptitudes and needs of the individual. It vitiates the opportunity for guidance when teachers are in charge of large numbers and are compelled to reckon with groups instead of giving their attention to individuals.

Brooklyn has one school with 9,944, the New Utrecht High School, and another with 8,711, the James Madison High School. The James Monroe High School, New York City, has an enrollment of 8,572 compared with the next large school, the Carl Shurz High School, Chicago, which has 8,106 pupils. The Austin High School, Chicago, ranks eleventh with 6,547 pupils.

The Evening High School, San Francisco, has an enrollment of 5,728, the Arsenal Technical School, Indianapolis, 5,421, and the Dickinson High School, Jersey City, N. J., has approximately 5,000. The Roosevelt High School and the Albert G. Lane High School, Chicago, have more than 5,000 pupils each. With the exception of the individual schools in the cities mentioned, the other large schools are either in New York City or in Brooklyn.

Sound System Is Teaching Aid and Time Saver

Whether or not a sound system is a necessary part of the modern school's equipment is a question that is being raised by an increasing number of educators. The author of this article believes that it is

By LORENZO H. KNAPP, Principal, Port Chester Senior High School, Port Chester, N. Y.

THE recently completed Port Chester Senior High School, Port Chester, N. Y., is strictly modern in design and equipment. There are separate gymnasiums for girls and boys, a special "corrective" gymnasium for helping to correct pupils' physical defects, a large cafeteria in the basement and an auditorium that will accommodate the entire student body.

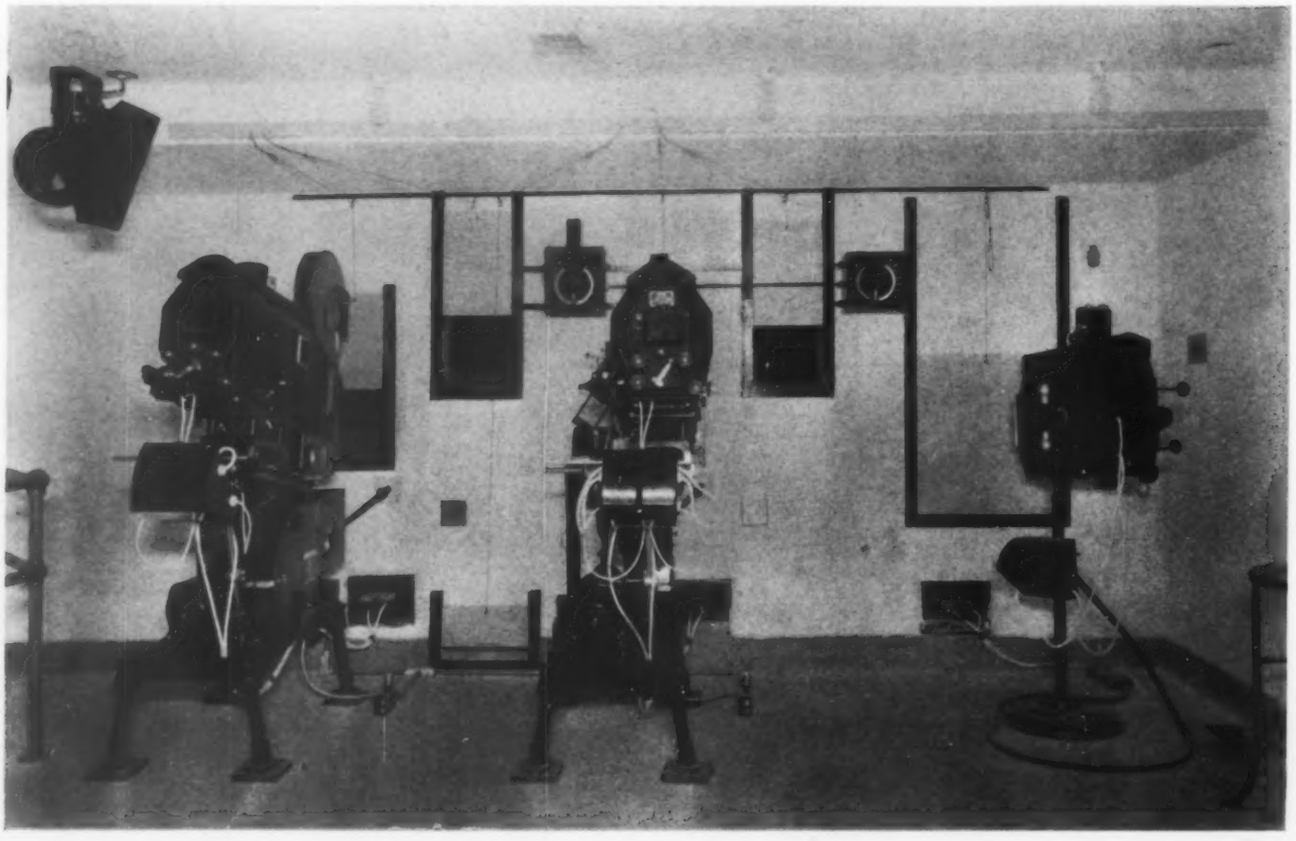
One of the most interesting features of the school's equipment is the unified sound system. Recognizing the growing need for complete and flexible facilities for sound reproduction, the school board in collaboration with its architects, Tooker and Marsh, designed a comprehensive sound system for the school.

The complete system comprises sound pictures, an announcing system, facilities for radio program distribution and a music reproduction system. Two amplifying channels have been installed, which means that two different programs can be run simultaneously in the various rooms, thus affording great flexibility.

For convenience in its use and to provide proper supervision over the operation of the system, the

A view of the assembly hall. The picture screen is raised, revealing the talking picture horn on the stage.

Music reproducer in use for girls' gymnasium class. The loudspeaker is at the right of the photograph. The lower picture shows the projection room equipped with theatrical type sound projectors and monitor horn.



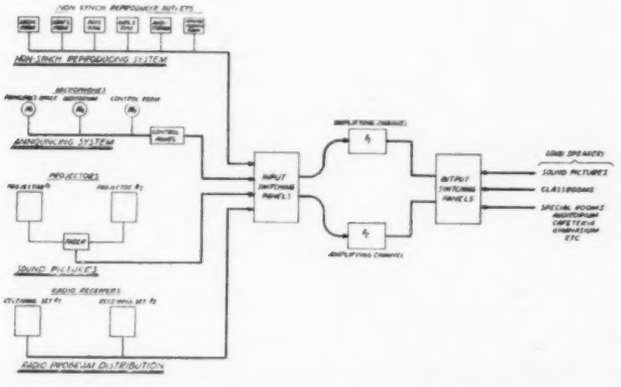
amplifiers, radio receivers and switching equipment are in a control room adjacent to the principal's office. The loudspeaker circuits from all over the building terminate on a switching panel in this room; consequently, by means of switch keys, any one of the loudspeakers may be connected to either of the two amplifying channels, or it may be cut off. Each loudspeaker has its own local volume control, but the classroom speakers can be cut off only at the control panel. This means that the system is under the absolute control of the principal for emergency announcements and monitoring purposes. Likewise, all input circuits terminate on a switching panel so that any input may be connected to one or both of the amplifiers.

Can Be Used to Make Announcements

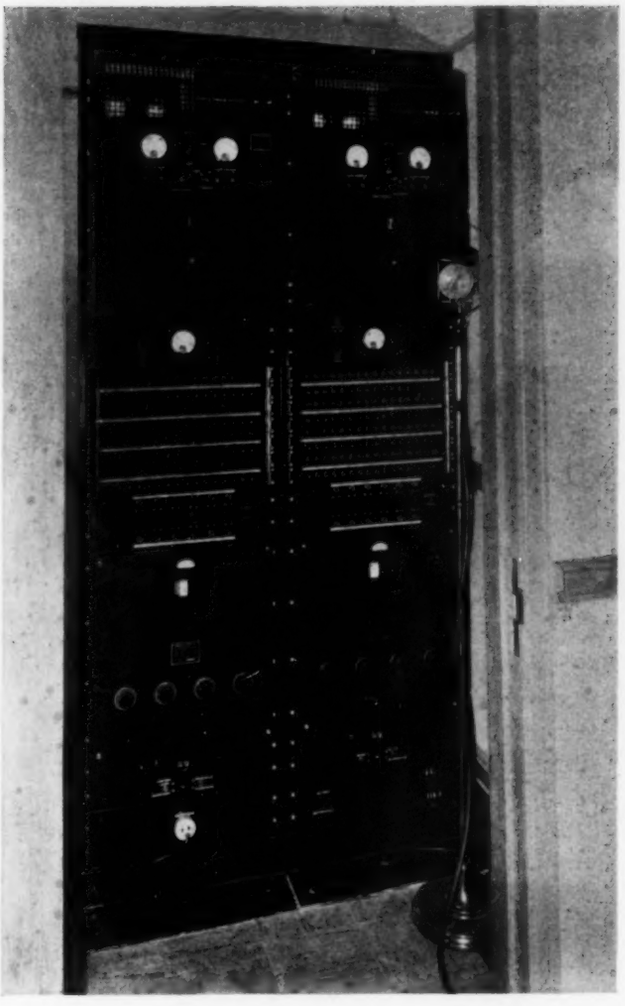
Two radio receivers permit the simultaneous reception of two different programs that can be distributed to two separate groups of loudspeakers. A class in history, therefore, can be listening to a broadcast program of historical interest at the same time a class in music is listening to a musical program.

The large auditorium is equipped for the showing of talking motion pictures. A standard sound picture system, similar to that used in many commercial theaters, is installed in the projection room and the stage is equipped with the theatrical type of horn and screen. Two motion picture projectors have been installed so that a continuous program may be run. Either one of the two amplifier channels may be used in conjunction with the sound picture program, leaving the remaining channel available for other uses. The flexibility features that have been provided in the system quite obviously add greatly to its value.

Another valuable feature of the system is its adaptability for announcing purposes. An announcement may be made from the principal's office to any one or all of the classrooms whenever



This drawing shows the mechanical features of the sound system installation.



The main control panels, showing radio receivers, amplifiers and announcing microphone.

it is not desired to assemble the student body in the auditorium.

A lecture or program being given in the auditorium can be picked up by means of a microphone on the stage and broadcast to the other rooms. The loudspeakers in the auditorium can be used in conjunction with the stage microphone as a voice reenforcement system.

On many occasions it is desirable to provide a definite musical program in the classrooms, the gymnasiums or the auditorium. To meet this need an electric music reproducer set is used to reproduce recorded music through the system. The reproducer is mounted on rubber tired wheels so that it can be moved to the various input locations for local control of the program at the place where the music is wanted.

The flexibility, convenience and general usefulness of such a sound system is readily apparent, as well as the new avenue that it opens for education. It is recognized more and more that a complete sound system is an important feature of the modern school.

How Thirteen States Standardize Their Elementary Schools

An analysis of the requirements and the principal factors involved in standardization as it exists in the South, the Middle West and the Far West

By HENRY H. HILL, Superintendent of Schools, Lexington, Ky.

WHEN in 1871 the University of Michigan admitted to its freshman class without examination the graduates of four high schools, it started a train of events that has resulted in the establishment of state high school standards in some form in forty-seven of our forty-eight states.

During the sixty years of development and growth of secondary schools that have elapsed since 1871, standardization requirements for high schools have been a strong influence in securing from the public the money needed for buildings, equipment and trained teachers. Unfortunately for the elementary schools, the higher institutions of learning have never been a strong factor in the development of elementary school standards, and it was not until 1895 that Minnesota led the way by definitely establishing state elementary school standards. Although Williams[1] reports that in 1844 Rhode Island made a statewide survey and has had systematic standardization programs ever since, it seems reasonable to assign credit to Minnesota for initiating the modern program of state elementary standardization.

What Standardization Includes

The term standardization may be taken to include state laws, requirements of the state board of education and rules and regulations established by the state department of education. There are many states, however, that have enacted legislation pertaining to the elementary schools but have not definitely established formal standards. To achieve concreteness and clarity, I have limited this study to the printed state elementary standards of thirteen states. The standards of several states, among them Indiana, Delaware and Ohio, were out of print in 1930, when the present study was initiated. Other states, among them Kentucky and Alabama, are preparing more definite standardization programs for the elementary schools. The Eastern group of states, which is not represented in this analysis, has in general few printed standards governing either high schools or elementary schools. Thus, while this study makes no pretension to inclusiveness, it seems reasonable to assume that it represents a fair cross section of state elementary school standardization gained by analyzing the printed standards of thirteen states in the South, the Middle West and the Far West.

Analyzing the Standards

Copies of the elementary standards of these states were obtained, the requirements studied and the principal factors in the requirements listed in check list form. The check lists were submitted to the state elementary school supervisors for correction or addition. The data shown in Table I have been approved by the state elementary supervisors of the thirteen states included and are believed to be accurate.

It is evident from Table I that in twelve of the thirteen states, standards for elementary schools have been established by the state department of education, West Virginia alone definitely lodging the authority for this duty in the state board of education. As a matter of fact, in some of the other states the legal authority for the establishment of standards is delegated to the state board of education, but since the state board in turn delegates this responsibility to the state department of education, the major responsibility in reality belongs to the latter agency. In all of the states included in this study the state department of education discharges the function of inspection, the actual field work usually being entrusted to the state elementary school supervisors.

Seven states issue certificates of some kind to the standard elementary schools, except that Wyoming issues this certificate in the form of a

[1]Williams, J. D., State Elementary School Standardization, unpublished master's thesis at the University of Kentucky.

shield bearing the words "Wyoming Standard School." Kansas provides a certificate and in addition a plate to be placed over the door. Only Minnesota and Missouri do not publish a formal list of standard schools.

In Minnesota, Virginia and West Virginia, standard elementary schools are granted allotments of state aid in addition to the amounts apportioned to nonstandard schools, the exact amount of the apportionment in each state being determined by regulations administered by the state department of education. According to the requirements and regulations for standard schools, issued by the state board of education, West Virginia distributes aid as follows:

"The standard schools shall receive state aid as follows: first class one-room, one hundred and twenty dollars per year; second class one-room, one hundred dollars per year; first class consolidated school, four dollars per pupil, to be paid on average daily attendance, the total amount not to exceed eight hundred dollars; second class consolidated school, three dollars per pupil, which shall be based on average daily attendance, the total amount not to exceed six hundred dollars. It is provided further that the state aid for the standard schools shall be paid out of the general school fund to the funds of the district wherein the schools are located; that the state superintendent of schools shall annually deposit with the treasurer of the district board of education the amount provided for the benefit of each approved standard school as herein provided."

Georgia gives partial state aid to standard schools and Missouri gives slightly more aid "if needed," to standard than to nonstandard schools. In the other eight states the distribution of school funds is unaffected by elementary standardization requirements.

How Schools Are Scored

Eight of the thirteen states use score cards as a means of classifying elementary schools, and six of these eight states enlist the services of the county superintendents in scoring the schools. The score cards used all show the direct or indirect influence of the Strayer-Engelhardt score card used for rating elementary school buildings but all include many factors not considered in any building score cards. The score cards are usually based on a total perfect score of 1,000 points. The following major subdivisions are used, the numbers in parentheses indicating the frequency of occurrence and equivalent terms being listed under one head: grounds (5); buildings and rooms (5); equipment (5); teachers (3); records and reports (1); pupils (1); community (1); school organization (3); the school (1); school plant (2); school efficiency (1); teacher, pupils, community (1).

Usually the score granted a school upon inspection largely determines its acceptance or rejection as a standard school. In states where there are several gradations of standard elementary schools the score obtained by a school determines in which class or gradation the school is classified. For example, out of a total of 2,100 possible points on the model school score card, Oklahoma requires a score of 1,000 points to win recognition as a model school and a score of 1,500 points to be classified as a superior model school. In addition to the required rating on the score card used, the typical state requires certain additional standards. A few states achieve the same results by making certain items of the score card mandatory. For teachers to use as a self-rating device, Oklahoma provides an instructional score card, arranged in three major divisions—classroom management, classroom procedure and classroom outcomes.

Correlating Various Standards

Only five of the thirteen states attempt to correlate elementary standards with high school standards in order to safeguard the interests of the elementary school. Arkansas has Class A, B, C and D high schools. A local district must meet the state requirements for a Class A elementary school before the high school in the same district is eligible for approval as a Class A high school, a similar requirement applying to the other three classes of elementary and high schools. The other four states use similar methods to achieve the same end.

The thirteen states vary in the number of groups of standard schools for which provision is made, four states having only one group or gradation of standard schools, the others providing from two to four groups. In order to make their standards more flexible, four states provide in addition a number of subgroups.

Florida, for example, has established standards for four groups of elementary schools: Group 1, for schools of ten or more teachers exclusive of the principal; Group 2, for schools of six to nine teachers exclusive of the principal; Group 3, for schools of three to five teachers including the principal, and Group 4, for schools of one or two teachers. A school of any one of these groups may be ranked as an exceptional standard school, a superior standard school, a regulation standard school or a limited standard school. Thus the classification of schools according to groups is based essentially on the size of the school and certain other quantitative standards, while classification according to subgroups is largely determined by

qualitative standards. In the other states having more than one classification of standard elementary schools, both quantitative and qualitative standards are used, but the emphasis in general is on quantity.

Ten of the thirteen states have standards expressly for the one-room school or which may be applied to the one-room school or one-teacher school. On the other hand, Georgia and North Carolina do not rate as standard schools with fewer than three and seven teachers, respectively. These contrasting policies are the result of con-

TABLE I—PRINCIPAL STATE ELEMENTARY SCHOOOL STANDARDS IN EFFECT IN 1930 FOR THIRTEEN STATES

	Arkansas	Florida	Georgia	Kansas	Louisiana	Minnesota	Missouri	North Carolina	Oklahoma	Texas	Virginia	West Virginia	Wyoming	TOTALS
I Administration														
1. Standards established by State Department	x	x	x	x	x	x	x	x	x	x	x	[10]	x	12[10]
2. Inspection by State Department	x	x	x	x	x	x	x	x	x	x	x	x	x	13
3. Certificate issued to standard school		x	x	x					x	x		x	x[11]	7
4. Standard schools listed and published	x	x	x	x	x			x	x	x	x	x	x	11
5. State aid to standard schools			x[4]			x	x[6]				x	x		5
6. Scorecard used	x	x	x				x		x	x		x	x	8
7. County superintendent assists in scoring	x		x		x				x	x	x			6
8. Correlation with high school standards	x	x	x						x		x			5
II Types of Standard Schools														
1. Number of groups	4	4	3	2	1	2	2	2	3	1	1	2	1	
2. Number of sub-groups		4				6		2		5[7]		3		
3. Standards for one-room schools	x[1]	x[2]		x	x	x	x		x		x	x	x	10
4. Minimum number of teachers for smallest standard school	1	1	4	2	1	1	1	7	1			1	1	
III Standards for														
1. Length of term	x	x	x	x	x	x	x	x	x	x	x	x	x	13
2. Length of elementary course	x	x	x	x	x	x	x	x			x		x	10
3. Number of grades to teacher	x				x									2
4. Minimum average daily attendance per teacher	x						x	x			x[8]	x	x[12]	6
5. Maximum average daily attendance per teacher	x		x		x									3
6. Per cent of average daily attendance									x	x				2
7. Maximum average daily attendance per room			x					x[13]	x					3
8. Training of teachers	x	x	x	x	x	x	x	x	x	x	x	x	x	13
9. Libraries	x	x	x	x	x	x	x	x	x	x	x	x	x	13
10. Supplementary readers	x	x	x	x	x	x	x	x	x	x		x	x	12
11. Minimum enrolment		x[3]						x		x				3
12. Equipment	x	x	x	x	x	x	x	x	x	x	x	x	x	13
13. Buildings and grounds	x	x	x	x	x	x	x	x	x	x	x	x	x	13
14. Administration of School		x	x	x					x	x				5
IV Miscellaneous														
1. Permanent records required		x	x		x	x		x	x		x[9]	x	x	9
2. Formal request for rating			x			x			x	x			x	5
3. Date first standards established	1927	1920	1927[5]	1916	1928	1895		1924		1926	1918	1921	1918	
V Chief purposes of standardization														
1. To improve elementary schools	x	x	x	x	x	x	x	x	x	x	x	x	x	13
2. To stimulate progress through state aid for standard schools			x				x				x	x		4
3. To encourage larger schools			x					x			x			3

[1]No separate standards but a one-room school may be standard.
[2]Standards for schools having 1-2, 3-5, 6-9 and 10 and above teachers.
[3]Minimum enrollment per teacher is specified.
[4]State aid "in part."
[5]Present standards set up in 1927.
[6]If needed, slightly more aid to standard schools than to non-standard.
[7]These 5 subgroups are suggested for county superintendents.
[8]There are certain exceptions to the minimum.
[9]Permanent records "as to classification of pupils."
[10]Standards established by state board of education in West Virginia.
[11]Also a metal shield displayed on the exterior of building.
[12]160 days required to qualify for oil royalty.
[13]North Carolina requires a minimum average daily attendance for the school also.

trasting methods of treating the problem of the one-room school. States that standardize one-room schools believe that as long as we have the one-room school we should make it as efficient as possible. In contrast, Georgia and North Carolina believe that the one-room school should be largely ignored, lest increasing its efficiency prolong its life and delay the ultimate elimination of small elementary school units.

What Table I Shows

On account of the different methods of listing state standards it has been difficult to incorporate into any one table the details of all standards. Many standards, in part mandatory and in part permissive or suggestive, are purposely stated in indefinite terms to provide opportunity for a reasonable interpretation. For these reasons only the types of standards and not the specific requirements in the thirteen states have been listed in Table I.

All thirteen states have standards for the length of term, the typical number of weeks being thirty-six, with thirty-two weeks acceptable for the lower classifications of standard schools in a few states. The length of the elementary course is usually seven years in the states having the eleven-grade system and eight years in the states having the twelve-grade system. In practice, several states recognize a school having a six-year course when this school is part of a system having a junior high school organization.

It will be seen from Table I that items 3, 4, 5, 6, 7 and 11 under "Standards" are designed primarily to prevent undesirable underloading or overloading of teachers and to stimulate attendance. Two states limit the number of grades per teacher, six specify an acceptable minimum average daily attendance per teacher, three states list an acceptable maximum average daily attendance per teacher, two states express a minimum percentage of average daily attendance, three limit the maximum average daily attendance per room and three require a minimum enrollment in addition to a minimum attendance. For the highest classification of standard schools Arkansas permits only two grades to the teacher, with the intention of securing larger school units. For the highest classification of elementary schools, this state requires in average daily attendance per teacher a minimum of twenty-five pupils and a maximum of forty. The requirements of other states vary only as to exactness of detail and method of application.

All thirteen states list teacher training requirements, some by means of the type of license required and others through stating the required number of hours of general and professional training. To meet the standards of the highest classification of elementary schools, two years of college training is almost uniformly required by every state. Many states, however, make some provision by which teachers in active service who have not had two years of college work may qualify by earning annually a certain number of credit hours in summer school and extension class courses.

To meet the standards of the lowest classification of elementary schools, the requirements vary considerably, some states requiring only high school graduation or less, with certain requirements for experience and professional training. To protect the successful experienced teacher with little training and to require better trained teachers for the elementary schools is the double problem that most states are slowly solving by limiting entrance to the teaching profession to the better qualified applicants. Primarily it is a problem that must be solved by proper certification laws but state elementary school standards facilitate administration of such laws and serve to prepare the way for better certification procedure.

Table I shows that all thirteen states have library standards, the requirements varying from a general statement that the school must have an "adequate" library to specific lists of books that must be purchased. All except Virginia require supplementary readers. Eight states list supplementary reading requirements that vary in number of sets specified, two to three sets per grade being the approximate median for the eight states. The number of library books ranges from fifty in Florida and Kansas (for a standard school) to 700 for the highest classification in North Carolina. In addition most of the states require dictionaries, reference books and bookcases.

Standardizing Equipment

All of the states included in the study have standards for equipment, the requirements again varying from "adequate" equipment to rather detailed lists that are required or suggested. Table III shows the items of equipment required, recommended or suggested by one or more of the thirteen states. The equipment has been divided into two types, general and classroom, although it is obvious that some of the general equipment would be used in one-room schools as classroom equipment also. Some states list the required and recommended equipment as part of the standards, but the typical state incorporates the equipment lists into the score card, specifying a required score for classification as a standard school. Kansas lists in the score card in black faced type the items that are mandatory and in addition requires a total of 950

points for classification as a superior grade school and 850 points for a standard grade school. In this manner a school may exercise some choice in the selection of certain types of equipment, but it must be reasonably well equipped to meet the point requirements.

All of the thirteen states have standards for the building and grounds, typical standards being based on the usual building score card requirements. The typical requirements include some of the following points: School grounds shall be well drained, well kept, and shall offer adequate space for a playground; at least 100 square feet of good blackboards shall be provided in each schoolroom; there must be an approved system of heating and ventilating; rooms must not exceed 24 feet in width. In determining whether a school meets the standards for building and grounds considerable latitude is usually allowed the school on any one item, but the required point score prevents a school with inadequate building and grounds from being classified.

Five states set up standards for the administration of the school. Most of these requirements relate to records, plan books, reports, programs of study, attendance and so on and, as in the case of some other standards, they are typically set up as part of the score card.

Nine states require permanent records and five require a formal request for an inspection and rating. By requiring a formal request for classification, the state department secures information useful to the inspector in preparing to visit the school, and in addition places responsibility on the

TABLE II—EQUIPMENT AND SUPPLIES REQUIRED, RECOMMENDED OR SUGGESTED IN THE ELEMENTARY STANDARDS OF THIRTEEN STATES

General

- Adjustable shades
- Ash pail and shovels
- Broom
- Cooking utensils
- Cookstove
- Cooler or bubbler fountain
- Desk and filing case for principal
- Dry storm case
- Dustpan
- Fire escapes
- First aid outfit
- Flag
- Flagstaff
- Flyproof lunch cupboards
- Foot scraper or steel mat
- Liquid soap dispenser
- Mirror
- Mop
- Organ
- Paper towels
- Phonograph
- Phonograph records
- Piano
- Playground
  - Balance beams
  - Basket balls and courts
  - Basket ball outfit
  - Climbing ropes
  - Croquet set and court
  - Dodge ball
  - Flying jenny
  - Footballs
  - Giant stride
  - Horizontal bars
  - Horizontal ladder
  - Horseshoe courts and horseshoes
  - Indian clubs
  - Jumping ropes
  - Ocean wave
  - Playground baseballs
  - Sand pile
  - Seesaws
  - Slides
  - Soccer
  - Soft rubber balls
  - Swings
  - Tennis courts and nets
  - Volley balls and nets
- Radio
- Scales for weighing pupils
- Sewing machine
- Special primary equipment
- Wash basin
- Washstand
- Wastebaskets

Classroom Equipment and Supplies

- Bible
- Blackboard
- Bookcase
- Bulletin board
- Burlap on wall
- Chairs for visitors
- Charts
- Clock
- Crayon
- Dictionaries
- Drawing and construction materials
- Drinking cups
- Framed pictures
- Globes
- Hand bell
- Hand printing set and duplicator
- Library books
- Magazines
- Musical instrument
- Oiled dustcloth
- Pencil sharpener
- Permanent records
- Pitch pipe
- Plan book
- Pointers
- Rack for keeping bulletins
- Reading table
- Reference set
- Sand table and display board
- Schoolroom flag
- Seat work
- Set of weights and measures
- Spindles for teacher's desk
- State flag
- Supplementary readers
- Tape for repairing books
- Teacher's desk and chair
- Thermometer
- Tools
- Wall maps
- Waste paper receptacles
- Yard stick

applicant school for meeting most of the requirements before inspection.

Of the eleven states reporting the date when standards were first established, Minnesota comes first with 1895 and Louisiana last with 1928. It will be noticed that all standards except those of Minnesota were established during the war and postwar periods. By the limited data shown, there seems evident a trend towards state standardization of elementary schools since the World War period.

To improve the elementary schools is one of the chief purposes of standardization in all states. Through their elementary standards four states propose also to stimulate progress by allotting additional state funds to elementary schools that meet state standards. The amount of aid granted is not large, being based primarily on the "reward for effort" theory.

Forcing Small Schools to Consolidate

In Georgia, North Carolina and Virginia one of the chief purposes of standardization is the encouragement of the establishment of larger elementary units. It has already been noted that North Carolina refuses to standardize elementary schools of fewer than seven teachers, thus forcing these schools to consolidate in order to be classified as standard elementary schools.

This study may be summarized as follows:

1. The analysis of the elementary standards of thirteen states may with reasonable assurance be accepted as a cross section of state elementary standardization in the United States.

2. The comparatively recent beginnings of elementary standardization and the predominant interest of institutions of higher learning in the high schools are two factors in the slow development of state elementary standards.

3. The score cards used in many states as part of the state standards include many features not originally included in the score cards used for evaluating buildings.

4. Most states have well defined requirements for libraries and supplementary readers.

5. The typical state has more than one type or classification of standard elementary schools.

6. State elementary school standards are administered by the state departments of education.

7. As reported by thirteen states, the chief purposes of elementary school standardization are, first, to improve the elementary schools, second, to encourage progress through state aid and third, to encourage the establishment of larger units.

8. Although subject to the dangers of any type of standardization of schools, the establishment of flexible but definite elementary standards and their careful administration seem to promise progress to any state, especially if the state is predominantly rural and is as yet unable satisfactorily to equalize educational opportunity.

9. In the past, colleges have too largely dominated high schools. At present the high schools secure too many advantages at the expense of the elementary school. In the future, by a proper correlation of elementary and high school standards, states may safeguard the interests of the elementary school.

Model Elementary School to Be Seen at Century of Progress

A model elementary school building will be exhibited at the Century of Progress Exposition in Chicago, in 1933, according to reports.

The building will be a six grade elementary school, two stories high, without basement, of steel construction with either brick or stone exterior, and with a capacity for 742 pupils. It will be thoroughly equipped for such modern aids to teaching as the radio and sound films.

Rooms of five sizes will be available: the assembly hall, the double classroom, the classroom, the half classroom or double workroom, and the small workroom.

Eight small workrooms, each 11 by 16 feet, on the second floor of the building will be equipped for the use of from three to six pupils, so that from twenty-five to fifty pupils can be accommodated simultaneously. Some of these rooms will be fitted for art and construction projects and some for science, while others will be equipped with reference materials, blackboard and "round table" for group discussion. These rooms may be combined by two into larger rooms, 16 by 22 feet, as every two rooms will be separated from each other by a folding partition. These double workrooms will be of a size suitable for dramatics or other work requiring a separate room smaller than a classroom but larger than a small workroom.

Classrooms will be separated by pairs by folding partitions, so that two of these may be combined into one of double classroom size for larger audiences as well as for study hall purposes.

The floors will be of linoleum, cases will be recessed and the furniture will be movable. Blackboards will be placed on the front and side walls, even on the panels of the folding partitions. A general glass area will be allowed for light.

Chicago architects who designed the building have asked for and have incorporated the suggestions of many leading school architects.

Basic Administrative Problems:

Lowering School Costs and Raising the Quality of Instruction

By JOHN GUY FOWLKES, Professor of Education, University of Wisconsin

A TERRIFIC attack is being made at present upon the cost of public schools. Strong demands are being made for the reduction of public school costs. Equally strong demands are being made for the maintenance of the high quality of offering now made by the public schools. It is obvious that either economies must be made in the organization and administration of schools, or standards of schools must be lowered if expenditures for public schools are decreased. It is a well known fact that in the business world that maximum operating efficiency demands a minimum sized plant. It seems then that below certain limits size of school would be a major factor in costs.

The following discussion is based upon a study of the 423 high school districts of Wisconsin.[1] It is hoped that this report will stimulate similar studies in other states and will indicate some possible methods of reducing the cost of public education and at the same time raising rather than lowering the quality of education.

More than 80 per cent of the area of Wisconsin is not included in a high school district. There are, however, 423 high school districts in the remaining territory. The enrollments in these high schools range from thirty to about 15,000 pupils. Table I shows these high school districts classified by the size of school and the cost per pupil.

The median enrollment is 104.27 pupils, while the mean enrollment is 160.12 pupils. The median cost per pupil enrolled is $87.76, while the mean cost per pupil enrolled is $90.75. Of the 205 schools having an enrollment of less than 100, there are 129 which have an instructional cost per pupil enrolled equal to or exceeding $104.27. Of the 112 schools having an instructional cost per pupil enrolled exceeding $100, only 12 schools have an enrollment of 200 or more. One-fourth of the schools have total enrollments of 70 or less, one-half have total enrollments of 104 or less and three-fourths

[1]Acknowledgment is made to George Skewes and Theodore Christenson, graduate students at the University of Wisconsin, for the compilation of data used in this discussion.

TABLE I—423 HIGH SCHOOL DISTRICTS OF WISCONSIN CLASSIFIED ACCORDING TO SCHOOL ENROLLMENT AND COST PER PUPIL ENROLLED

Instructional cost per pupil enrolled	Total Enrollment 1–24	25–49	50–74	75–99	100–124	125–149	150–174	175–199	200–224	225–249	250–274	275–299	300–324	325–349	350–374	375–399	400–424	425–449	450 over	Total
$70 -		3	9	14	3	4	3	2	3		2	2		2		1	2	1	6	57
71 - 74		5	3	6	2	2	2		3	2		1							5	31
75 - 79		1	10	8	7	2		4	2	2	1	1		1	1				5	45
80 - 84		2	7	8	4	6	2	2	3	2		1	1	1	1	2	1	1	8	52
85 - 89			9	4	4	6	7	2		2	3	1	1			1	1	1	6	48
90 - 94		5	6	12	5	1	3	1	1	2		1	1				1	1	6	46
95 - 99		5	1	9	6	5		3				1	1						1	32
100 -104		2	7	8	2	5		3	1		1				1				2	32
105 -109		5	5	3	1	3	1												1	19
110 -114		1	10		2	1				1	1								1	17
115 -119		1	5	3	2			1		1										13
120 -124		2	1	4		1	1													9
125 -129	1		1	2																4
130 -134		2	3							1										6
135 -139		1	1																	2
140 -144		1	1																	2
145 -149		3	1																	4
150 -154				1																1
155 -over	1		2																	3
Total	2	39	82	82	38	36	19	18	13	13	8	8	4	4	3	4	5	4	41	423

Median Cost - $87.76 Median Enrollment - 104.27
Mean Cost - 90.75 Mean Enrollment - 160.12

TABLE II—423 HIGH SCHOOL DISTRICTS OF WISCONSIN CLASSIFIED ACCORDING TO AVERAGE DAILY ATTENDANCE AND PUPIL-TEACHER RATIO

Pupil-Teacher Ratio	Average Daily Attendance																													
	1 24	25 49	50 74	75 99	100 124	125 149	150 174	175 199	200 224	225 249	250 274	275 299	300 324	325 349	350 374	375 399	400 424	425 449	450 474	475 499	500 524	525 549	550 574	575 599	600 624	625 649	650 674	675 699	700 724	725 over	Total
1- 2																															
3- 4																															
5- 6																															
7- 8	1	2																													3
9-10	2	5	2																												9
11-12	1	6	6	1																											14
13-14		14	18	5	1	1																									39
15-16		9	15	17	9	3	2	2	1	1																					57
17-18		4	31	24	11	11	4		2	2	2																				91
19-20		8	6	14	8	10	5	3	5	4	1	1		2	2	1	2			1			1	1						4	79
21-22		3	5	6	6	5	4	4	3	5	1	3	2		2	4	1	2	1		1				1					5	66
23-24		2		7	1	3	3	3	2		3		1	1	1			2	2		2									5	38
25-26			1	1	1	1		1	2		1	1					1				1									4	15
27-28			1	1								1				1		1			1							1			4
29-30			1		1											1														2	5
Total	4	53	84	78	38	34	18	13	15	12	8	6	3	3	5	7	4	5	3	1	5	0	1	1	1	0	0	1	0	20	423

Median Pupil-Teacher Ratio - 18.97
Mean Pupil-Teacher Ratio - 19.05
Median A. D. A - 97.59
Mean A. D. A. - 166.03

have total enrollments of 216 or less. One-fourth of the schools have instructional costs per pupil enrolled of $76.97 or less, one-half have instrucitonal costs of $87.76 or less and three-fourths have instructional costs of $95.98 or less. In light of these facts, it can be said that the small school has the larger instructional cost per pupil enrolled. When such is not the case, it is probable that the quality of schooling offered is decidedly inferior.

Table II shows the high school districts of Wisconsin classified by the average daily attendance and the pupil-teacher ratio.

The average daily attendance ranges from 21 to nearly 14,000. The range in pupil-teacher ratio is from 7 to 30. The median average daily attendance per district is 97.59, while the mean average daily attendance is 166.03. The median pupil-teacher ratio is 18.97, while the mean pupil-teacher ratio is 19.05. One-fourth of the districts have an average daily attendance of 64.57 or less; one-half have an average daily attendance of 97.59 or less, while three-fourths have an average daily attendance of 190.86 or less. One-fourth of the districts have pupil-teacher ratios of 16.43 or less, one-half of 18.97 or less and three-fourths have pupil-teacher ratios of 21.77 or less. Apparently the situation in Wisconsin is typical of the country as a whole, since 60 per cent of the high schools in the United States have fewer than 100 pupils in average daily attendance.

Table III shows the 423 high school districts of Wisconsin classified by the pupil-teacher ratio and the cost per pupil in average daily attendance.

The range in cost per pupil in average daily attendance is from $70 per pupil to $419. The $70 school has a pupil-teacher ratio of 23, while the $419 school has a pupil-teacher ratio of 8. One-fourth of the districts have a cost per pupil in average daily attendance of $107.50 or less, one-half a cost of $122.72 or less and three-fourths a cost of $146.25 or less. Of the 44 districts which have pupil-teacher ratios of less than 14, the median cost is $178.33, while the 65 schools which have pupil teacher ratios of 22 or more show a median cost of only $101.39.

From the data presented, it is evident that for the high schools of Wisconsin the smaller schools have the highest cost per pupil enrolled and per pupil in average daily attendance. The smaller schools likewise have the lower pupil-teacher ratios. It is believed that Wisconsin is typical of the United States as a whole.

TABLE III—423 HIGH SCHOOL DISTRICTS IN WISCONSIN CLASSIFIED ACCORDING TO PUPIL-TEACHER RATIO AND COST PER PUPIL IN AVERAGE DAILY ATTENDANCE

Pupil-Teacher Ratio	Cost per Pupil in Average Daily Attendance																														
	$50 54	$55 59	$60 64	$65 69	$70 74	$75 79	$80 84	$85 89	$90 94	$95 99	$100 104	$105 109	$110 114	$115 119	$120 124	$125 129	$130 134	$135 139	$140 144	$145 149	$150 154	$155 159	$160 164	$165 169	$170 174	$175 179	$180 184	$185 189	$190 194	$195 199	$200 204	$205 over	Total
7																														1	1
8																													1		1	2
9																														1		1	2
10																				1								1	1	1	4	8
11																									1		1				1	4	4
12																1					1		1	2		1					3	10
13														1		2			1		2	1	4	2		1	1	1	1			16
14														3			2		1	1	1	4	2	1			2	2	1			21
15														2	1	2		2		2	2	1		1	3		1	1	1		1		23
16									1			2		1	5	3	3	5	4	2			3	1	1					3			34
17								1		2	4	6		4	2	4	5	4	6	6		1	3		1				.1				52
18									1	2	2	3		9	3	6	2	2	2	1	2				1								38
19								1	2	3	4	3	1	5	5	1	5	3	2		3			1									39
20							1	1	1	3	5	6	4	4	2	1	1	4	2	2	2		1					1			1		40
21						1			2	2	7	5	3	4	2	3	3	1				3			1								37
22						1		1	2	4	3	3	4	3	2	2	1		3	1													30
23					1	1		1	3	3	2	3	2	4			1	1	1	1													24
24							1	1		4	3	1	1	1		2																	14
25						2		1			2	1	1	1				1															9
26								2	1		1				1	1																	6
27								2		1	1																						4
28								1	1					1																			3
29						1				1																							2
30						1		1					1																				3
Total					1	7	2	13	12	24	32	29	26	43	23	27	26	22	26	17	13	10	14	8	8	4	4	6	6	6	1	13	423

Median Pupil-Teacher Ratio - 18.99
Mean Pupil-Teacher Ratio - 18.61
Median cost per pupil in A. D. A. - $122.72
Mean cost per pupil in A. D. A. - 130.12

Editorials

Rational and Beneficial Physical Education

THE movement to require every pupil in every public school to have some kind of physical exercise or physical education every day is gaining momentum. In junior and senior high schools, in teachers' colleges and in all liberal arts colleges and universities there is a strong tendency in the direction of developing athletic teams on the supposition that football, baseball, track, basket ball, wrestling and the like afford the best possible kind of physical education. A large proportion of all the funds expended for physical education is devoted to the maintenance of athletic departments that are concerned solely with the development of competitive teams.

Prof. W. H. Twenhofel, University of Wisconsin, has accumulated interesting evidence relating to the efficiency of athletic training as a form of physical education. Every year he and his assistants take large groups of men and some women out into the field on geologic expeditions. The students must observe geologic features, which requires that for upwards of eight hours a day they must travel over rough country. This is a good test of physical endurance as well as of mental alertness. Professor Twenhofel has been studying the physical hardihood of the students on these trying trips. He has found that as a rule the students who have been trained the hardest in athletic competition become exhausted first on these expeditions. He says, "The men who have been trained in athletic teams are best in spurts, but they do not have sustained endurance. They fatigue more readily than students who have had general physical exercise but no intensive athletic training." At the opening of his classes he is accustomed to say, "If there are men in here who are on competitive athletic teams, they ought to leave right now because they cannot endure the hardship of the geologic expeditions that we must make." He excludes men not because they are athletically inclined, but rather because they lack physical stamina for a long continued test.

The daily requirements of practically all the young people who are now growing up in the schools will involve endurance under long continued strain rather than tremendous energy in brief spurts. We ought to work out a physical education program that will fit them for the régime of daily life and not for possible periods of supreme effort. We ought to devote at least nine-tenths of all the resources that can be spent for physical education in training them in all-round physical poise, control and well-being rather than for great achievement in any specific form of athletic competition. Coach French of Harvard showed in an article in *The Outlook* on the training of the football man that he is prepared to do automatically a specific stunt under specific conditions that he probably never will encounter in any place outside of the football field. The same is true of intensive training in any branch of competitive athletics. This fact should guide us in determining the allotment of funds for general physical education of all pupils in the schools as compared with the training of pupils for athletic teams.

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Ellwood P. Cubberley

AFTER thirty-five years of service at Leland Stanford University, Dean Ellwood Patterson Cubberley will retire from active service on his sixty-fifth birthday, June 6, 1933.

A national committee of former students, associates and friends has been formed to commemorate this event in a manner worthy of the man and his service. Apart from a sincere expression of appreciation for his outstanding contributions to public education, the committee hopes to perpetuate Doctor Cubberley's work by presenting an oil portrait to the school of education, publishing a commemorative volume by nationally known leaders in education, securing funds for an endowed lectureship which will bring to Stanford campus each year an outstanding man to interpret and evaluate trends in education, and arranging for a fitting celebration at the time of Doctor Cubberley's retirement.

This spontaneous tribute from former students and friends is a fitting and appropriate gesture of appreciation to an unusual leader. Fortunately it comes while Doctor Cubberley is at the height of his career and physically able to receive and enjoy the plaudits of friends and students.

Ellwood Patterson Cubberley, in an active and many sided professional life, stands out in bold relief as one of the men to whom American public education owes much. At this time it is difficult to say which field of activity will finally represent his greatest achievement. Time alone can truly evaluate his numerous contributions. Some of us will remember him for his unusual skill as a teacher, his uncanny ability to diagnose problems, to evaluate both concept and practice and, above all, to develop in his students an unusual type of idealism.

True to the principles of his social philosophy, Doctor Cubberley as a teacher has never swerved from his principles for the sake of expediency or popular acclaim. He has never sought success by bending or bowing to popular opinion. This outstanding quality in leadership grows more pronounced as the years go by. As a result success and appreciation came without seeking. It was a natural and spontaneous growth.

To others, the name Cubberley stands for an unusually prolific author in the literature of public school administration. To his influence over the hundreds of students who have been privileged to sit before him in the classroom and develop friendly personal relationships with him off the campus, must be added the unmeasurable influence he has exerted upon the thousands of students in education who have been brought close to the man through his writings. His contributions to the history of education and to the empirical literature of administration, his development of the form and technique of the outside educational survey have been accepted as authoritative standards in this and many foreign countries. Nearly one-half million copies of his various contributions have been placed in circulation and in professional libraries.

His further contributions as editor of textbooks in education, now totalling ninety volumes, have been instrumental in bringing to students of education the work of many other authors.

Any of these three major contributions should be sufficient to win a man distinction. When all three are considered together, the truly outstanding nature of his service becomes apparent.

No comment on his work would be complete without some consideration of Doctor Cubberley as a man. Modest, almost to the point of retirement; humble, with a true appreciation of the magnitude and possibilities of his field of endeavor; democratic in feeling and in action; honest, almost to the point of severity, to himself and his field; kindly and charitable toward the efforts, mistakes and shortcomings of others, and friendly in a large human way, his character and personality present such unusual aspects that many will cherish his memory more for his qualities as a man than for his other outstanding contributions.

It is pleasing that Doctor Cubberley will retire from his exacting institutional duties at the height of his career and in full possession of his physical and mental powers. It is our sincere hope that he will be able, after a period of much deserved rest, again to devote himself to both his writing and his editorial work. We feel that his future will be as potential as his past and that his separation from active work at Stanford will mean merely that he will continue his work in wider fields.

Education Is Adjustment

EDUCATION is a process of adjustment. Every experience that enters into the life of a person works some change in him, as every boat launched on a lake or every tree that falls into its waters raises the surface of the lake and alters the contour of its shores, even if imperceptibly.

Every change in a person means a readjustment to his environment. It may be a physical adjustment, as in the case of one who grows taller or puts on weight. His clothes must be altered in order that he may wear them with comfort. Or it may be an emotional adjustment, as in the case of one who loses his dearest friend. He must readjust himself emotionally to a new life, and a reduced circle of intimates if he is to preserve the emotional balance necessary to make the remainder of his own life worth living. Or, it may be a mental adjustment, as in the case of scientists when a new law has been deduced or a new planet discovered. The discoveries of Darwin, Pasteur and Einstein, within the memory of living scientists, have caused radical readjustments in scientific thought and practice.

Throughout life all of us are making new physical, emotional and mental adjustments made necessary by new experiences that are constantly entering our lives. The sum total of this constant process of adjustment is education. Education, therefore, is not simply a scholastic process. It is related to all experiences and is lifelong.

Modern educational leaders are taking into account the fact that education is a lifelong process. They realize that what happens to a child before he enters school is of supreme importance. As a result preschool training is emphasized. They understand also that education will not cease at the individual's graduation from school, and that he should be surrounded by constructive and refining influences throughout life. This accounts for the more recent development of adult education through continuation and evening schools, and for the great impetus that has been given during the past few years to public libraries, public concerts, public lectures and forums, art museums and institutions of similar character. The large universities, once cloistral in their scope, are now extending their opportunities to the general public through extension courses, evening courses and lectures free to the public. Large industries now provide educational and recreational opportunities for their employees. Many churches, sensing the modern spirit, also have widened their sphere of influence to include in their program wholesome entertainment and recreation for all persons.

The acceptance of the truth that education is adjustment to the manifold phases of life explains the extension of the modern school curriculum to embrace physical and health training, recreation, manual and industrial education, art, music and definite courses in character building.

The school, realizing the fact that other institutions than the school affect the destiny of the individual, has entered into effective cooperation with the home, the public library, the museums and the other institutions and organizations of the community. Also, understanding the inevitable fact that the margin of leisure is rapidly expanding with the multiplication of labor saving devices, the school is giving its students some preparation for the wholesome use of leisure.

We cannot adequately appreciate the organization and processes of a modern school system unless we understand the fact that education is adjustment to life as a whole and not simply a regimen of mental training. Physical and emotional adjustments are as important as mental adjustments. The recognition of this fact explains the scope and comprehensiveness of the modern school curriculum. It is useless to scoff at the modern school curriculum as too general, too complicated or too extensive. If education is adjustment to life, it must be an adjustment to life as we find it today, not as it prevailed a century ago.

The economics of a hundred years ago, while serving well the purpose of that age, would be wholly inadequate to solve the financial and business problems of today. The philosophy of a hundred years ago, although much of it is still useful, is not suited to meet the social needs of the present generation. Likewise the education of a hundred years ago, although it embraced elements that are still usable, is by no means sufficient to adjust the children of this generation to the complex and many-sided life in which they find themselves. We cannot help the youth of today successfully to meet the problems of their generation by looking longingly into a past glorified by distance and hallowed by a few precious memories, but thrown out of perspective by the accumulation of years of unremembered experiences. We must face the future, strive to understand the youth of this generation, endeavor to comprehend modern life as a whole and plan our educational processes effectively.

This is what the more intelligent educators are striving to do. But mistakes are being made, and will continue to be made, because it is much easier to look backward than to understand the present and to anticipate the future. Our responsibility is clear, and the success of our educational efforts will depend upon the intelligence and sincerity with which we accept that responsibility.—*E. C. B.*

Pressure Not the Best Tool

WITH the opening of a new school year will come again the annual campaign for renewal of membership in state and national professional organizations.

Any teacher actively interested in the welfare of education and the advancement of the teaching profession, will see in these associations means for achieving both objectives. It is especially desirable under current conditions to maintain a strong professional solidarity. The responsibility of each individual towards his profession beyond the purely contractual requirements must be obvious to all. This is one of the differences between a profession and a trade.

It is also true that membership in these professional organizations has diminished considerably during the past two years. These changes have affected revenue. Since the activities of the professional groups are dependent solely on revenue derived from dues, there is some danger that many of their useful activities will be subject either to radical curtailment or to complete elimination. As a result there is some worry about this situation.

It does not seem reasonable to suppose that the teachers are not aware of their professional responsibilities. We believe that the solution of the problem lies in another field and that the remedy may be readily effected. In the past, state and national organization has possibly been influenced to a large extent by commercial practices and influences. The "One Hundred Per Cent" slogan has been used too effectively. This statement does not imply that the organizations themselves have been responsible for pressure brought on the individual teacher to join the organization but rather that the psychology of the slogan, together with publicity for successful achievement, has probably caused many field administrators to create an impression among the teaching personnel that membership was mandatory. Wherever the fault may lie for the pressure exerted to secure memberships, it is quite obvious that many teachers are conscious that pressure is being brought to bear. This state of matters should be given careful study.

We believe that if the technique of presentation in membership campaigns this year is changed from the typical delivering of administrative ukase on a "must" basis to a campaign of education respecting professional responsibilities and opportunities, with no suggestion of compulsion, the response of the teachers will be greater and membership interest will be strengthened. The application of our instructional philosophy to the administration of our professional organizations would represent a big step forward.

Happy to Say—By WILLIAM McANDREW

PRINCIPAL FRANK WELLS has cut the amount of matter read in the seventh and eighth grades in half and has made much of it matter about which there can be disputes. High marks are given pupils who can give good reasons for doubting passages which they select to controvert.

FAVORITE topics are advertisements of tooth pastes, mouth washes, cold and cough cures, deodorants, ultraviolet rays and breakfast foods.

I WISH Frank had been principal of my school, fifty years ago, for it fixed in me a fool tendency to believe what I see in print.

I READ the statement on the label of a bottle of tonic and swallow it.

IT IS a remarkable advance that a school, like Frank's, should actually aim at the open mind.

MY SCHOOL was for shutting it. History, arithmetic, algebra, geometry, science, were injected into me. Like grammar and spelling, they dealt with indisputables. Even my literature teachers told me what authors were the greatest. "The book says so" was enough to settle a question. "It's in print" was just as good. Obedience, unquestioning obedience, was my school's watchword.

IT IS the struggle of my life to get myself uneducated.

FRANK tells me that the school which only teaches facts as facts is in danger of fitting citizens for the past. Some school men might think he is in danger of making his job a thing of the past.

THEREFORE I abstain from telling in what city his school is, lest some estimable advertiser protests to Frank's estimable trustees.

I HOPE Frank will have his young disputers take up the Republican, the Democratic, the Communist, the Socialist and the Prohibition political platforms without unquestioning obedience to any.

WHY not dispute these?

IT WOULD be prime practice for high school children who are soon to be called upon to take a stand in the capacity of voters.

THEY will meet controversial questions. How are such matters to be handled? By blind acceptance, unquestioning obedience, or by analysis, comparison of pros and cons, judgment and readiness for revision as more knowledge is gained?

WHOSE business is it to teach the coming citizen to reason, to decide and to hold the open mind?

YOURS, Brother. G. Washington, J. Adams, T. Jefferson, A. Lincoln, W. Wilson, H. Hoover, F. Roosevelt and A. Smith are among the hundreds of respectables who have said so.

THE strength that comes from a feeling of success, the drive ahead, is so well known that it pays to plan so that there will be definite achievable goals scattered through the whole business.

IF instead of a vague hope of reaching the top today, you make a preliminary survey and select a point not too difficult to reach and have with yourself an understanding that you may, not must, go beyond it, your disappointments and worries will be fewer.

HOW tell an educated man? Ask him to find something in a book. See whether he goes straight to the index.

YOUR love for the great common people grows in proportion to your success in getting as many as possible to do something uncommon for the community.

THE cigarmakers put pretty bands on their work. This helps to sell the cigar but the user does not keep them on. A Ph.D. degree is like this. No use after you get your place.

YOU can keep the world as bright as it was to you as a boy if you look at stars, clouds, hills, plains, rivers, flowers and children, telling yourself you love them. It sounds pretty, but it works.

News of the Month

Cornerstone Is Laid for New High School in Pottstown, Pa.

The cornerstone of the new Pottstown Junior High School, being erected in Pottstown, Pa., was laid recently in the presence of several thousand people. Among those who addressed the gathering was F. Herman Fritz, superintendent. When completed the new building, with its equipment, will cost $385,273. The structure will be of red brick with white stone finish.

The gymnasium and auditorium will form the end units and the administrative section will form the center motif. The auditorium will have a seating capacity of 1,200, the gymnasium 1,800.

The rooms include facilities for the following: music, art, office, health, food, laboratory, kitchen and cafeteria, shops, storage, drafting, library, science laboratory and science classrooms, junior business training, typewriting, teachers' rest rooms and general classrooms, with a total capacity of 1,500.

The new building will be ready for the 1933 term.

Distributing Centers Are Established for Educational Films

Announcement has been made of the establishment of educational film exchanges in Seattle, Wash., Los Angeles, Chicago and New York City for the distribution of talking motion pictures on educational, religious, scientific and musical subjects.

Most of the pictures in the library are one or two reels, and many of them have been prepared strictly from a pedagogical standpoint. Associated with the production of the individual subjects have been such authorities as William J. Cooper, United States commissioner of education, J. W. Crabtree, secretary, National Educational Association, Francis P. Garvin, Johns Hopkins University, Dr. David E. Smith, professor emeritus, Columbia University, and Dr. Hughes Mearns, professor of education, New York University.

Films available in the teacher training group are as follows:

"Creative Approach to Education," setting forth concisely some fundamentals underlying creative effort, by Doctor Mearns; "Dynamic Learning," interpreting some current concepts of the philosophy of education, by Dr. W. H. Kilpatrick, professor of education, Teachers' College, Columbia University; "The Elementary Teacher as a Guide," the social trend toward which education should point the way, by Dr. B. H. Bode, professor of education, Ohio State University, in collaboration with Dr. Laura Zirbes, associate professor of principles of education, Ohio State University; "Guidance in Public Schools," the important functions of the program of guidance in public schools, by Dr. Richard D. Allen, assistant superintendent of schools, Providence, R. I.; "The Study of Infant Behavior," the preschool child from twelve to forty-four weeks, by Dr. Arnold Gesell, director, Yale University Psycho Clinic; "Testing Child Intelligence," for teachers and parents concerning child intelligence tests, by Ina Craig Sartorius, assistant principal, Horace Mann Elementary School, and "The Teaching of Reading," modern methods of reading instruction, by Dr. Arthur Gates, professor of education, Teachers' College, Columbia University.

The vocational guidance classification contains the following films:

"The Builders," a survey of various occupations in the building field, and "Choosing Your Vocation," the steps to be taken in choosing an occupation, by Dr. Harry B. Kitson, professor of education, Teachers' College, Columbia University.

Education Is "Big Business" Statistics Show

Education in the United States has developed into a "big business" with property valuations at more than $11,200,000,000, and is being influenced more and more by business, Maris M. Proffitt, consultant, Office of Education, pointed out in an address before the Arts and Crafts Club, New York City.

"Patterning after developments in industry, American education," he said, "has been growing into a form of mass education with relative lowered costs."

ECONOMY OF SPEED

That old god Mercury was the quickest worker the Greek mind could conceive. But he was a slow-poke compared to modern speedsters. The Mimeograph, with its rapid and economical duplication of all kinds of bulletins, letters, questionnaires, outlines, charts, registration forms, etc., is doing much more than a Mercurian task. It is helping many a school to balance its budget and is saving the energy of teachers who have increased schedules. » » » For latest information concerning its use in schools, write A. B. Dick Company, Chicago—or see classified telephone directory for local address.

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News of the Month (Cont'd)

Mr. Proffitt called attention to the growing tendency of American school systems to introduce vocational courses to meet the demands of the industrial civilization. Mr. Proffitt in his address said in part:

"The assessed valuation of all property in the United States amounts to approximately $155,000,000,000, of which $120,000,000,000 is in real property. The value of all school property and endowments, both public and private, is estimated at $11,216,704,000; of this amount, $9,000,000,000 is invested in real property.

"The ratio, therefore, between school property and all other property is 14. In other words, out of every $14 worth of all types of property in the United States, there is $1 invested in school property of one kind or another.

"These statistics indicate that education is a big business in the United States. More than 26,500,000 pupils attend the elementary and high schools of the nation. For the older pupils we find a range of subject matter of instruction from Greek in the classical field to meat cutting and packing in the practical vocational field.

"Between these extremes in the range of classical and cultural subjects at one end and the practical vocational subjects at the other end, we find all modifications and varieties of subjects for which there is sufficient local interest and demand to warrant courses under public control.

"Patterning after developments in industry, American education has been growing into a form of mass education with relatively lowered costs. Industry pointed the way to standardization, to objective types of measures, and education has imitated by introducing standardized curricula, uniform methods of instruction and more effective organization."

Texas Takes Steps Toward Unified Educational System

After years of apparently fruitless discussion, both in and out of the legislature, Texas has taken one definite step toward the realization of a unified state program of public education, according to L. W. Rogers, first assistant superintendent of public instruction.

On March 14, the state board of education, which, by mandate of the people of Texas, in the form of a constitutional amendment replaced an ex-officio board of forty years' standing, began a comprehensive study of the per capita costs of instruction in the state supported institutions of higher learning as the basis for recommendations to the governor and the legislature as to the possibility for the elimination of waste or duplication of work.

The present state board was created by the legislature in 1929. The act which created the board prescribes "that it shall be the duty of the state board of education to make a careful study of the scope and purpose of the work of the state institutions of higher learning." The act also placed upon the state board of education the duty to recommend to the governor and the legislature "such changes in the course of study of the state institutions of higher learning as the needs of the state may warrant, with special reference to the elimination of any needless waste or duplication of work."

Mr. Rogers continues as follows in his explanation of the movement to bring about a united state program of education in Texas:

"For the first two years of its existence, the state board of education concerned itself primarily with the work of the public schools, taking no definite steps in the direction of exercising its authority over the organization and work of the higher institutions. In 1931 the legislature made a specific apropriation to finance a survey of the higher institutions of learning by the state board of education. Apparently deeming the present time opportune for the beginning of the work imposed upon the board by the act which created it, the state board at its last meeting took the first definite step in this direction.

"The significance of the action of the state board of education lies, first, in the fact that it is the first step toward a unified state educational program and, in the second place, in the distinctly new trend in state policy that it indicates. Admittedly, it indicates a trend toward more centralized state supervision over the entire system of public education.

"But just how far the state is to go in this direction is for the future to disclose. In other words, whether or not this is the beginning of a distinctly new state policy will depend, first, upon the nature of the report—that is, the board's own interpretation of its responsibility and authority in this respect—and, second, the extent to which the report receives approval from the public and legislative sanction."

How can pupils be expected to concentrate in *Noisy Rooms?*

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Acousti-Celotex is widely used in the schools of the nation to produce these results. This preference is due to its high degree of sound absorbing efficiency, predetermined and fixed.

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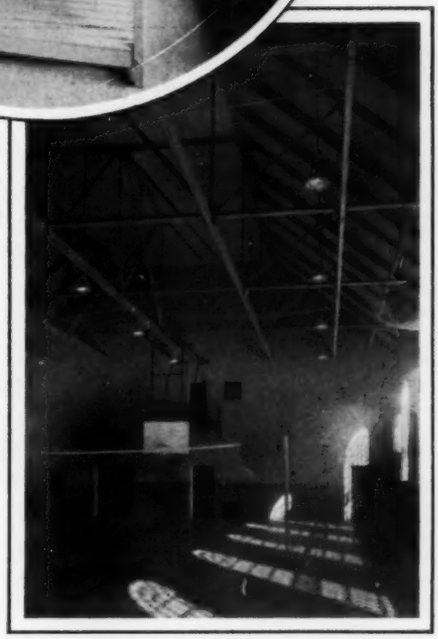
For full information write Acousti-Celotex Service Bureau, 919 North Michigan Ave., Chicago, Ill.

Noise of students busy in the wood working shop of Copernicus High School, Hamtramck, Mich., is subdued by the application of Acousti-Celotex to the ceiling. Architects: B. C. Wetzel Co.



Gymnasium activities create plenty of noise. In the athletic building of Williston Academy, Easthampton, Mass., the sounds are absorbed by Acousti-Celotex applied to the ceiling of the "gym." Architect: James H. MacNaughton, Boston, Mass.

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News of the Month (Cont'd)

"Education on Wheels" for Children in Isolated Ontario Districts

Five school cars are now in use in the Province of Ontario and two more are soon to be ready. These school cars, which were equipped by the Ontario Department of Education under an agreement between the department and the Canadian Pacific Railway Co., serve villages that are too small to justify the construction of schoolhouses.

These traveling classrooms are equipped with school seats and desks, a teacher's desk and chair, a bookcase with reference books, school books and supplies, including maps, charts, a globe and blackboards. The teacher has a living room, bedroom and bathroom.

The cars are moved by way-freight trains from point to point upon a fixed schedule that permits a certain number of days of classroom work to be done at each stop, while assigned home work is being done elsewhere on the route.

Most of the parents are Canadian Pacific Railway track maintenance men, trappers or lumbermen. Night classes are held for the adults.

The first school car was put into service in 1926. The plan was at first considered an experiment, but the satisfactory results that were obtained soon carried it beyond the experimental stage.

Cinema University Is Planned in London, England

The London *Times* reports a scheme for the establishment in London, England, of a People's Cinema University, announced by Sir James Marchant and Sir Oswald Stoll. The chief object of the university is to establish a cultural center for the practical application, study and development of cinematography in all its branches. The university will consist of a central building and a number of lecture halls and theaters equipped with sound film apparatus for the regular exhibition of films.

The central dome of the building will contain a Zeiss planetarium similar to those established in Germany, Philadelphia, Chicago, Rome, Vienna, Stockholm and elsewhere. The Zeiss planetarium is a cinematograph apparatus of a special type and construction, and has been devised for exhibiting with the illusion of reality the motions of the planets and stars. Over 100 projectors are so arranged and set in motion with respect to one another that the images of the celestial bodies which they project on a white surface some sixty odd feet in diameter are shown in the same position and motion as the unaided eye is accustomed to seeing them.

The lecture films to be exhibited at the university will be made by skilled technicians and the lectures will be given, it is stated, by recognized experts in their respective departments of knowledge. The courses will cover most branches of science, history, travel, literature, industrial processes, foreign languages, games and physical culture. Arrangements will be made for schools, colleges and institutions to be supplied with educational films. There will also be an adequate library of educational films to meet the requirements of teachers and educators. These films will be made in cooperation with an expert educational board, and will be distributed and collected throughout the country by motor van.

In the university there will be a public theater where foreign films and news will be shown in their original languages.

Ohio Court Awards Compensation in Death of Teacher

A school teacher, who after school hours was killed by an automobile while en route home with examination papers to grade them there due to lack of facilities for such work at the school, received an injury arising out of and in the course of his employment, the Ohio Supreme Court has held in awarding compensation in the case of Inglish *vs.* Industrial Commission of Ohio.

The court explained that the teacher was expected to grade the papers at home and this was the customary practice.

Adopts New Plan for School Paper

Instead of continuing publication of a school paper, Corry High School, Corry, Pa., has arranged with the local newspaper to publish one-half page of school news and material in each Monday evening's edition, according to *Pennsylvania School Journal.* The new plan not only gives the pupils the same experience in editing the news, but puts the school news in a larger number of homes and eliminates the item of finance.

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You may retain the concrete color of the floor by using Sonneborn's Cement Filler and Dustproofer in the transparent finish. Or, if you wish to work out a special decorative scheme, you can have it in a wide variety of colors.

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In the Educational Field

W. K. BILLINGS has been engaged by the board of education of Green township, Scioto County, Ohio, as superintendent of the township schools.

ALFRED L. BROWN, president, Florida School for the Deaf and the Blind, St. Augustine, Fla., has been appointed superintendent, Colorado School for Deaf and Blind, Colorado Springs, Colo. He will fill the vacancy caused by the death of DR. T. S. MCALONEY.

H. L. SHIBLER has resigned as superintendent of schools, Tiro, Ohio, to become superintendent of the school system, Mt. Gilead, Ohio. H. L. FORD has resigned as superintendent of the Mt. Gilead schools to accept the superintendency of the Port Clinton, Ohio, school system.

DR. DANIEL VARNEY THOMPSON, West Roxbury, Mass., headmaster at Roxbury Latin School, Boston, since 1921, died on August 21 as the result of a heart attack. He was in his sixty-sixth year at the time of his death. DOCTOR THOMPSON was graduated from Amherst College in 1889 and entered upon a teaching career shortly afterward. He was a member of the Headmasters' Association, the New England Association of Colleges and Secondary Schools and the Classical Association of New England.

OSCAR A. HAMILTON, superintendent of the New Hanover County North Carolina school system for the past five years, has resigned to accept a position in the commercial field.

ISAAC P. RICH, Seattle, Wash., one of the first superintendents of schools in King County, Washington, died on August 13, in his seventy-seventh year. After serving as county school superintendent and as principal in charge of schools in the Interbay district, he entered the commercial field.

NICHOLAS MOSELEY has been appointed superintendent of schools, Meriden, Conn., succeeding C. C. THOMPSON. He assumed his new duties on August 1.

DR. FRED G. STEVENSON has accepted a position as superintendent of the LaSalle-Peru Junior High School and director of the Oglesby Junior College, LaSalle, Ill. He succeeds the late DR. THOMAS J. MCCORMACK, who held the post for a long period preceding his death last year.

FLOYD R. ADAMS, formerly superintendent of schools, Farmington, Minn., has been selected to head the school system in Marshall, Minn. He was superintendent of schools in Mantorville, Minn., prior to assuming his new position.

DR. HARRY B. WILSON, who resigned as superintendent of schools, Berkeley, Calif., on January 1, 1928, after having served for ten years in that capacity, died at his home in Berkeley on August 9. In recent years he has served as national director of the American Junior Red Cross, with headquarters in Washington, D. C. DOCTOR WILSON had been superintendent of schools in the following cities: Salem, Ind., 1897-1902; Franklin, Ind., 1902-07; Decatur, Ill., 1907-13; Topeka, Kan., 1913-18; Berkeley, Calif., 1918-28. He was fifty-seven years of age at the time of his death.

W. M. STRICKLAND has been elected superintendent of schools, Buchanan, Ga.

C. H. WILLIAMS, superintendent of schools, Highland County, Ohio, has been appointed superintendent of schools in Butler County, Ohio, where he succeeds JOSEPH W. FICHTER who was appointed assistant state director of education a year ago and had been given a year's leave of absence. MR. WILLIAMS had been associated with the Highland County schools for four years.

THOMAS G. PULLEN is the newly appointed superintendent of schools in Talbot County, Maryland.

M. S. HALE has been appointed supervisor of schools, Tampa, Fla., succeeding M. W. CAROTHERS. MR. HALE was formerly supervisor of Negro schools in Tampa, and now all the schools in the city are under his supervision.

PHILIP M. FISHER, superintendent of academic institutions of the Oakland, Calif., school department from 1924 until his retirement last January, died on August 2 at the age of eighty years. He served as principal of the Oakland Technical High School for more than thirty years.

H. W. KIRCHER, superintendent of schools, Sheboygan, Wis., since 1924, died in that city on August 13 following an operation for a ruptured appendix. MR. KIRCHER had served as president of the North Central Teachers' Association, president of the City Superintendents' Association of

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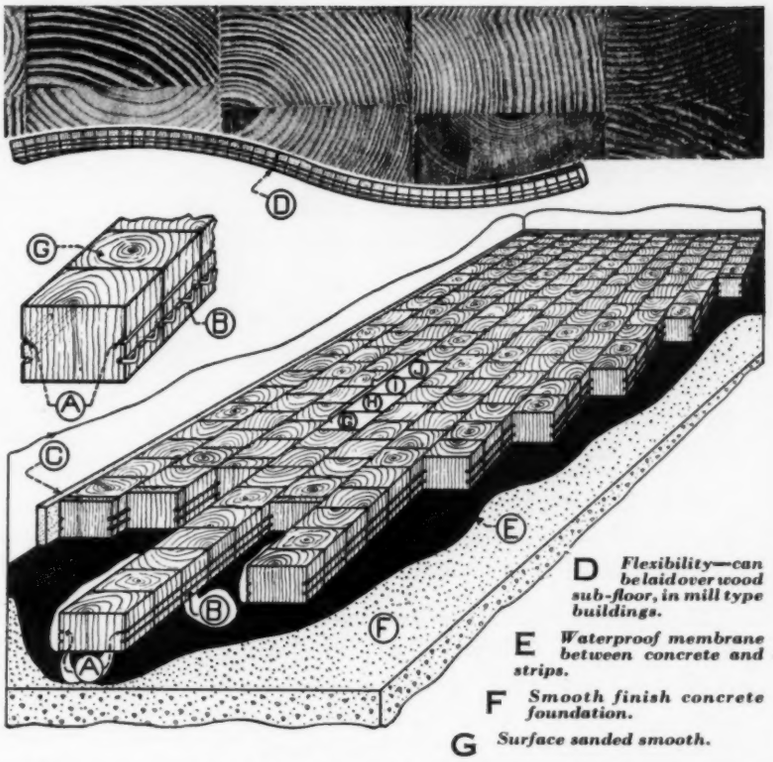

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In the Educational Field

Wisconsin, executive committee member of the Wisconsin Teachers' Association and president of the Fox River Valley Schoolmasters' Club. He was superintendent of schools, Merrill, Wis., for seven years before going to Sheboygan.

C. B. RAYBURN is the new superintendent of the Mahoning County, Ohio, schools, succeeding JEROME HULL, who had been head of the county school system since it was organized in 1914. MR. RAYBURN was superintendent of schools in Marion County, Ohio, for the past eight years.

HENRY L. CECIL has been elected superintendent of schools, Adams, Mass., succeeding RALPH S. SMITH.

CHARLES A. BUNKER, for twenty-eight years principal of Peacham Academy, Peacham, Vt., and former town superintendent of schools, died recently at his home in that city. He was 92 years of age at the time of his death.

CHARLES FREDERICK BALL, assistant superintendent of schools, Lawrence County, Pennsylvania, and head of the county school system for two terms, from 1918 to 1926, died recently in New Castle, Pa.

F. L. MILLER, superintendent of schools, Harvey, Ill., school district No. 152, has resigned after completing forty years of service.

G. H. MARSHALL has been elected superintendent of schools, Ottawa, Kan., succeeding the late A. F. SENTER, who died on August 2. MR. MARSHALL has been superintendent of schools, Augusta, Kan., for the past fifteen years.

ALBERT T. LANE, supervisor of research in the public schools, Medford, Mass., died recently. He was fifty-eight years of age. Before becoming affiliated with the Medford school system four years ago he served as superintendent of schools in Hampton and Raymond, N. H.

SUE A. KESSLER, superintendent of schools, Lyon County, Iowa, died recently at her home in Rock Rapids. She was serving her third term in the Lyon County office.

EDWIN C. BROOME, superintendent of schools, Philadelphia, received the university medal for distinguished service in the field of education at the recent commencement exercises of Columbia University, New York City.

DR. RALPH D. HETZEL, president of Pennsylvania State College, State College, Pa.; DR. C. D. CHAMPLIN, professor of education, and DR. WILL GRANT CHAMBERS, dean of the school of education, have been named by DR. JAMES N. RULE, state superintendent of public instruction, members of the commission on a survey of education in Pennsylvania.

CHARLES S. MILLER has been appointed superintendent of schools, Landsowne, Pa.

DR. LEONARD JOHN NUTTALL, JR., has been appointed superintendent of schools, Salt Lake City, Utah. He was formerly professor of education and director of training schools at the University of Utah.

JOHN A. LINEBARGER, Indianapolis, Ind., has been named superintendent of schools, Frankfort, Ind., succeeding JAMES W. STOTT, who has served in that capacity for the past ten years.

WILLIAM A. SIMPSON, formerly supervising principal in the schools of Milton, Vermont, has been elected principal of Woodstock Academy, Woodstock Hill, Conn., to succeed GEORGE B. WESTHAVER, who has been head of the academy for the past two years.

Summer Camp Established for Handicapped Children

Twenty-four cottages to care for 200 physically handicapped children are being built on the shores of Pine Lake, near Battle Creek, Mich., by the W. K. Kellogg Child Welfare Foundation. In addition to these cottages, the summer camp will also include an administration building, a small hospital and staff quarters.

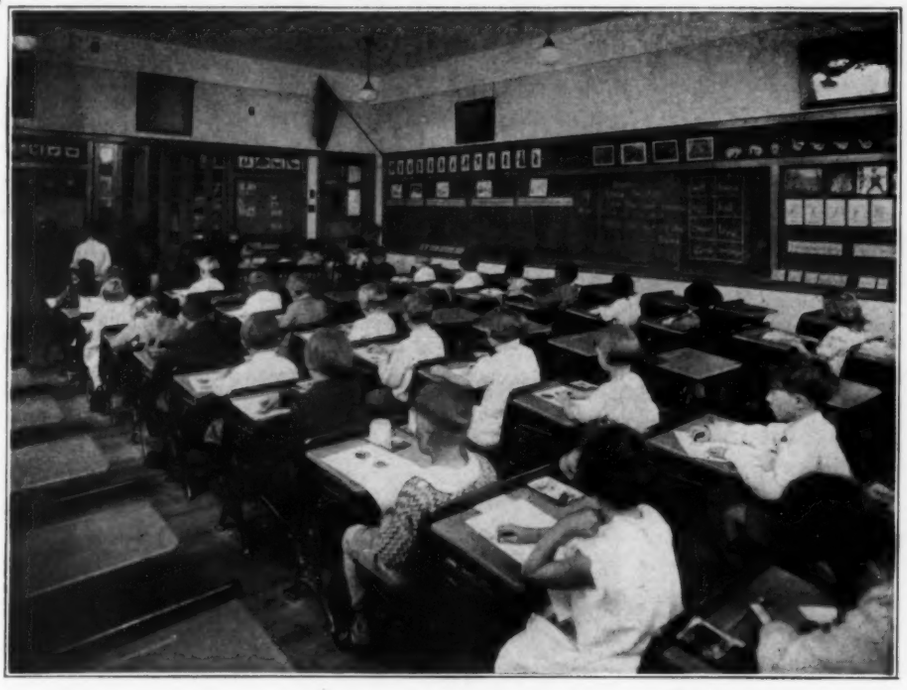
This is but one activity of the foundation which, during the past year, has been developing health programs in consolidated rural schools.

Dr. Stuart Pritchard is the director.

Survey Reveals Big Increase in High School Attendance

Fifty per cent of young Americans of high school age are now attending high school, according to the Federal Office of Education, as compared with only four per cent in 1890.

Painted walls and surfaces need Semdac Liquid Gloss



THE oils and gums which enter into the composition of paints and varnishes are affected by the air. Such surfaces are likely to crack, peel, grow dull. Semdac Liquid Gloss is the preservative and cleaner ideally suited to the school. Applied to painted and varnished areas it restores the original luster, safeguards against weathering action and protects against the marks and smudges of the careless child.

Semdac is economical in cost, and—best of all—its action, both as a cleanser and as a polish, requires a minimum of effort. In use it demands no excess rubbing. It spreads a gloss immediately, and it seals all cracks against further deterioration.

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Your School— Its Construction and Equipment

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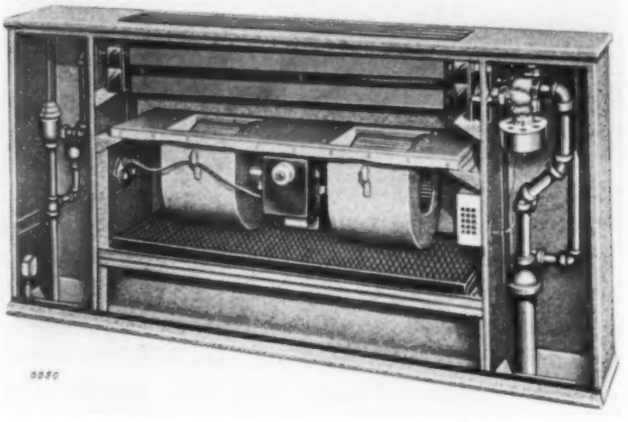
Self-Contained Control Features New Unit Ventilators

A new principle of heating and ventilating has resulted from recent developments in unit ventilators that have been made possible by the new methods of thermostatic control. Thermostats are now placed within the unit ventilator to control the heat delivered instead of being placed on the classroom wall. In this way a quicker response to changes of temperature is possible, and such influences as heat of occupancy and solar heat, as well as outside temperature, are governing factors in this type of regulation.

The principle upon which these new unit ventilators act is syncretization, and recirculated and outdoor air are combined and blended so that air below a 60 to 65 degree minimum cannot be blown into the classroom. These Universal Duo-Luxe Units, made by the American Blower Corp., 6000 Russel Street, Detroit, are of two types; the type D unit maintains a definite percentage of outdoor air up to and including 100 per cent, and the type O unit supplies a modulated amount of outdoor air depending on ventilation conditions in the classroom, but always delivering a definite minimum of fresh air during occupancy.

The general construction of the type D unit follows the older types of unit ventilators. One of the modifications, however, has been the use of two radiators within the unit. The lower or tempering radiator heats all the air passing over it to a definite minimum temperature, and the upper radiator supplies the additional heat necessary to maintain the desired room temperature. The lower radiator is controlled by a thermostat placed above it and between the two radiators. When the temperature of the air passing through the lower radiator reaches the degree at which the thermostat is set, only the amount of steam required to maintain the minimum air stream temperature will be flowing into the lower radiator. This temperature is usually between 60 and 65 degrees. The upper or heating radiator raises the temperature of the previously tempered air to the final temperature necessary to maintain the desired degree of room temperature. The flow of steam to this radiator is regulated by a thermostat in the unit ventilator over which room air is being drawn constantly. As the room temperature increases this radiator may be completely shut off, and only the tempering radiator heating the air to a minimum temperature remains in action.

The radiators are of the copper fin type, and have brass steam distributing tubes inside the four tubes of the radiator so that the smallest quantity of steam delivered is distributed evenly throughout the length of the radiator. These radiators are



Interior of type D Duo-Luxe unit ventilator.

connected to a single feed header, but require two separate feed supply pipes. The return headers are separate to allow for differences of expansion in the two radiators, and two return pipes are required. These radiators are designed to operate on return trap systems with individual traps for each of the two radiators.

The type O unit cannot be used where an invariable quantity of outdoor air is demanded by the school building code; however, outdoor air is always brought into the room during occupancy. The damper is adjusted so that a definite minimum of outdoor air is delivered, and in most cases this minimum is approximately one-third. The construction of this unit necessarily differs in some respects from the first unit.

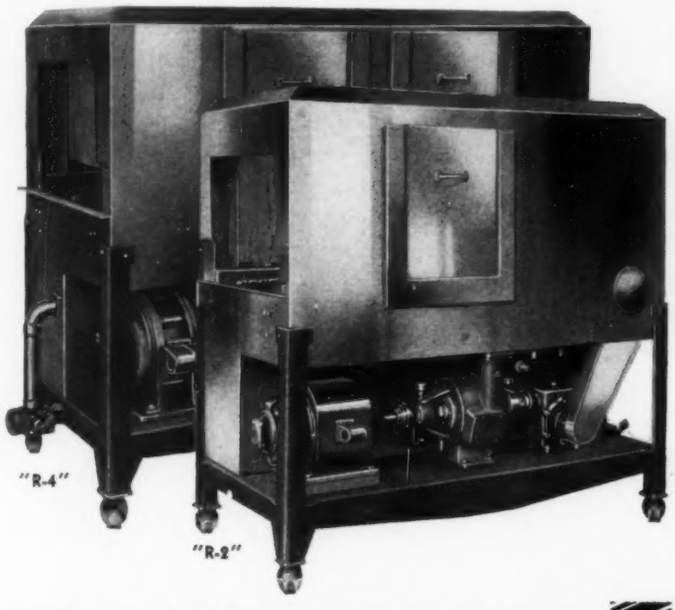
A single radiator of the copper fin type is used in this unit. The function of the lower radiator in type D is taken by a mixing damper which controls

Announcing 4 New Models COLT AUTOSAN

Now offers a complete family of rack type dishwashing machines

Four new Colt Autosans—"R-2" and "R-4" shown below and their big brothers "R-6" and "R-8"—complete a line of seven rack type machines. One of them will fit your requirements perfectly—big enough for rush hour loads—economical in cost and floor space.

Like all Colt Autosans, these new models are sturdy—ruggedly built for years of hard service under the toughest conditions.



Colt Autosan **Model "R-2".** A compact, rugged machine that will handle an amazing volume of work. New type heavy-duty pump, non-clogging spray arms, slot type rinse nozzles. All inside parts easily reached through door in hood. Scrap trays removable without tipping. Roller chain conveyor. Simplicity of design, quality of materials, and thoroughness of construction eliminate servicing.

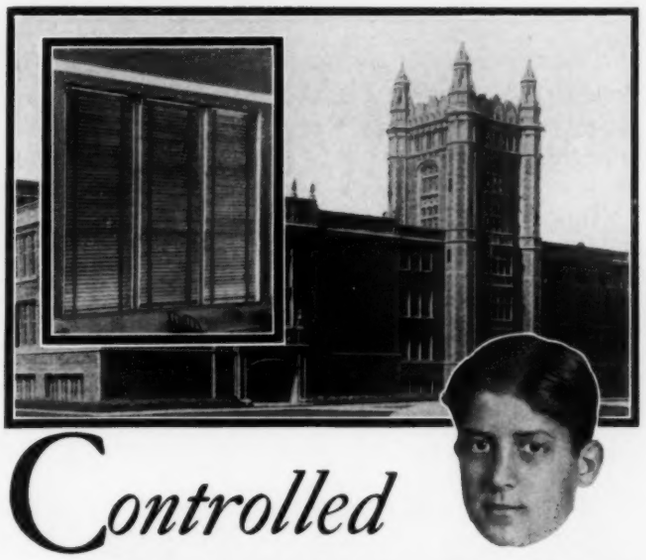
Colt Autosan **Model "R-4".** Where an enormous volume of work must be handled quickly, economically and thoroughly, here is your machine. *Five* sprays in the washing chamber remove even the most stubborn food particles—followed by a pump driven rinse and a final rinse with clean hot water, leaving tableware sparklingly clean. Similar to Model "R-2" but with two washing solution tanks and a larger number of spray jets, permitting faster conveyor travel. Models "R-6" and "R-8" (furnished on special order only) are of even larger capacity for the unusually heavy needs of large hotels, restaurants, and institutions.

Write for detailed information on the model you require. See for yourself how Colt Autosan offers utmost economy in cost and operation—greater convenience—and absolute dependability—in these new rack machines.

COLT'S PATENT FIRE ARMS MFG. CO.

AUTOSAN MACHINE DIVISION

HARTFORD, CONN., U. S. A.



Controlled DAYLIGHT means Good Eyesight

STUDENTS must *see* in order to *learn!* Yet—one out of every four of the great American student body suffers from some form of eye weakness due to inadequate, uncontrolled daylight illumination.

Western Venetian Blinds will overcome this situation. They give sufficient intensity, proper uniformity and diffusion of light on every desk—in every corner of any classroom. They prevent glare and control ventilation accurately, scientifically.

Western Venetian Blinds mean good eyesight, mental alertness, a minimum expenditure of nervous energy and full protection for the eyes of youth.

Western Venetian Blinds are used to guard eyesight in leading colleges, universities, public and private schools in this country. Get the facts! Signing coupon will bring them to you!

Let us make this Photometric Test—free of charge!

Why not learn the scientific truth about illumination in your classroom? Our Photometric test is free for the asking. Sign the coupon and one of our Illumination Experts will be glad to make this test in your classrooms, free of charge, anywhere, any time.

WESTERN VENETIAN BLIND CO.

"World's Largest Exclusive Manufacturer of Venetian Blinds"

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SALES REPRESENTATIVES IN ALL MAJOR CITIES

WESTERN VENETIAN BLIND CO.
Daylight Illumination Division—Dept. NS
2700 Long Beach Ave., Los Angeles, Calif.

GENTLEMEN: We are interested in the Photometric Test. Also send one of your brochures, "Controlled Daylight Protects the Eyes of Youth," to—

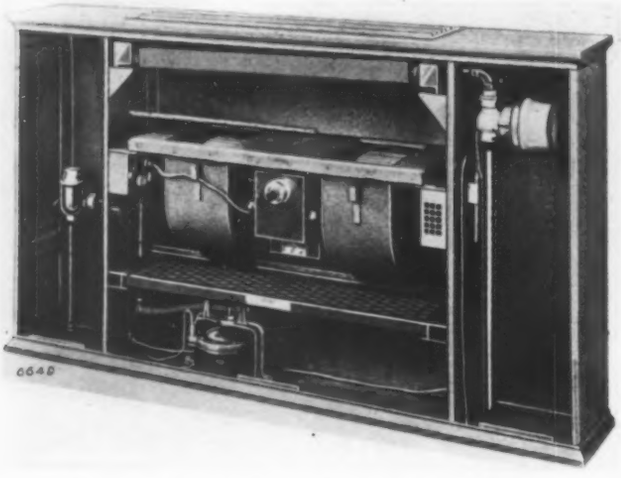
SCHOOL.....

STREET.....

CITY..... STATE.....

the percentages of outdoor and recirculated air admitted to the unit, and thereby maintains a constant minimum temperature of sixty degrees for the mixed air. The mixing damper is controlled by a thermostat placed above the ventilator fans, and the damper position is adjusted through either a heat or a pneumatic motor.

The amount of steam supplied to the radiator is controlled by room air passing over a thermostat contained in the body of the unit and operating the modulating radiator valve. This heats the tempered mixed air from its minimum sixty degrees to



Interior of type O Duo-Luxe unit ventilator.

the final temperature necessary to maintain an even warmth in the classroom. The total heating load is only that required to heat the mixed air stream from sixty degrees to a temperature that will maintain seventy degrees in the classroom. Whenever a 60-degree mixture of outdoor air and room air is sufficient to maintain a 70-degree room temperature no steam is required in the radiator.

Both type D and type O have all working parts enclosed in a green enamel casing which in the recessed type extends only 8½ inches into the room, and in the nonrecessed type, 14½ inches. Thirty-two inches is the standard height for these cases so that they may be easily placed beneath a window.

Electrical or pneumatic controls may be used with either type of unit. The principle of total recirculation until room temperature is brought up to the degree suitable for occupancy is incorporated in these machines.

Auxiliary radiators are not needed where the total B. T. U. capacity of the unit ventilator is greater than the total B. T. U. required for both heating and ventilating the room. However, it is good engineering practice to provide direct radiation in corner rooms having a double exposure. This simplifies the control problem, thereby reducing the expense of installation.

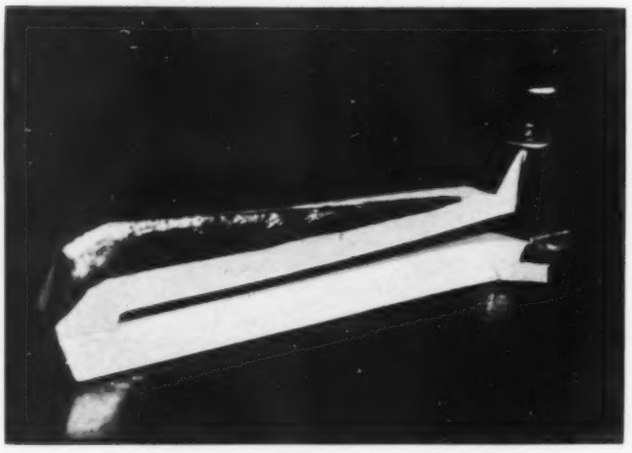
A Device That Simplifies Program Arrangement

One of the most harassing problems of the school administrator at the beginning of the school year is program arrangement. The elimination of conflicts and the rearrangement of classes to accommodate the maximum number of pupils requires more time than can be afforded this problem conveniently.

A device that will relieve this burden to some extent has been devised by the Oliver C. Steele Manufacturing Company, Spiceland, Ind. The school programmaker consists of three items—a deep throated paper punch, a set of class sheets and a red background card.

The class sheet has a space where the specific study, chemistry, English, biology or whatever is desired, may be written. The rest of the sheet is filled with small numbered circles each representing a pupil. These sheets may be obtained with 180, 324, 468 (multiples of 144), or more circles to accommodate both large and small enrollments.

To use this school programmaker, the administrator obtains the class rolls or schedules of each pupil's classes. A subordinate may then take over the work of listing and consecutively numbering each pupil. The class sheets are then labeled with each subject to be given during the semester. With its definite subject heading, the class sheet is then used in conjunction with the corresponding class



Punch for use with programmaker.

roll, and every pupil studying this subject has his numbered circle punched out of this sheet. A similar procedure is followed in preparing class sheets in all subjects for each class in the school.

When this routine work is accomplished the administrator may then continue with the problems of coordination and class or pupil adjustment, which require only a glance to determine what pupils and classes conflict. The procedure to deter-

TICK TOCK, TICK TOCK . . . *it's a long way from modern automatic time keeping systems. And the old splintery floor is a long way from gleaming Armstrong's Linoleum.*

How many obsolete things can you find in this old-time school-room?

THE clock that needs winding, the queer costumes, the wall paper . . . and, if you look closely, the abacus hanging on the wall in the upper right hand corner. But there's one more thing that is just as old-fashioned as any of these . . . the floor.

Those old splintery boards would nowadays be covered with smooth Armstrong's Linoleum. In fact, Armstrong Floors have become one of the signs of a truly modern school. Such floors are quiet, resilient, and sanitary. They are easy to clean and to keep clean. A simple waxing and polishing takes the place of obsolete scrubbing, oiling, scraping, and sanding methods of maintenance. As a result, school superintendents report appreciable savings in upkeep.

You can modernize and save immediately. Armstrong Floors are one of the modern labor-saving improvements that you can have without waiting to build a new school. Over the week-end they can be cemented in place, covering your old worn floors. The color-illustrated book, "Public Floors of Enduring Beauty" tells how this is done and shows how Armstrong Floors are being used in schools. For a free copy address the Armstrong Cork Company, 1211 State Street, Lancaster, Pennsylvania.

Armstrong's (A) *Product*

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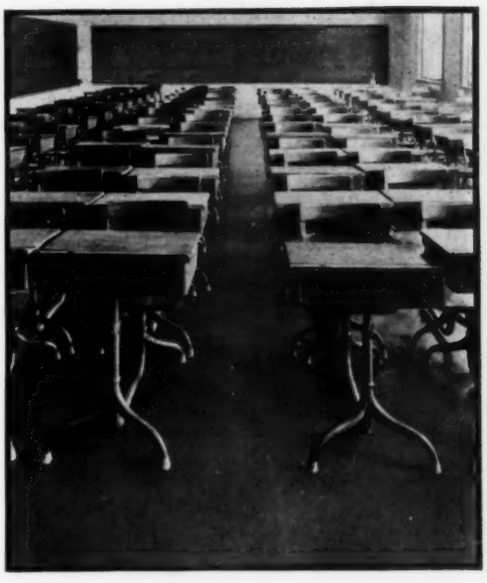


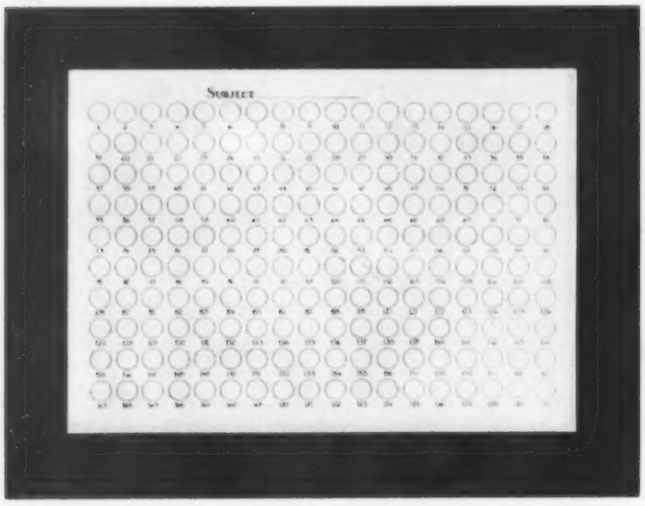
NOTHING OBSOLETE HERE. *The most modern school equipment and the most modern floor (Armstrong's Battleship Linoleum) have been used in the East High School, Buffalo, N. Y.*

Armstrong's Linoleum Floors

for every school and college

PLAIN ~ INLAID ~ EMBOSSED ~ JASPÉ ~ ARMSTRONG'S RUBBER TILE, CORK TILE, LINOTILE AND ACCOTILE

mine this is as follows: One subject sheet is placed over the red background card, with the result that every circle punched will show red. A second subject sheet that has been punched for a different class is then placed over this first sheet. If there are no conflicts the surface will be entirely white. But every red dot showing through the two subject sheets is an instantaneous warning, and indicates



Class sheet for use with programmaker.

not only a conflict, but also the names of the pupils who are causing the difficulty. By the same procedure, the facts are determined about each class on the schedule.

The proportion of red dots to the number of pupils in the class will indicate whether it is advisable to change the class hours or to remove the pupils causing the conflict.

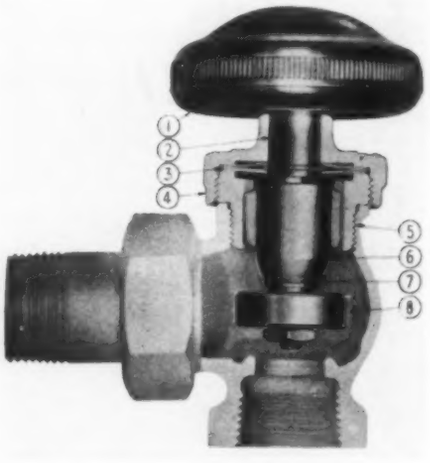
A Packless Radiator Valve for New Installations and Modernization

A radiator valve that completely eliminates all necessity for packing has been developed recently. For new installations the entire valve and bonnet assembly is desirable, but for modernizing defective or obsolete valves only the bonnet assembly need be purchased to obtain the packless feature. The Marsh Type "R" Bonnet Assembly, made by Jas. P. Marsh & Co., 2073 Southport Avenue, Chicago, is so constructed that it fits almost any standard make of packed or packless inlet valves. The bonnet replaces all of the original valve except the body, union nut and tail piece, and thereby makes it unnecessary to disconnect the valve in order to remove the old parts and install the new bonnet.

This packless feature of the bonnet is the same in principle whether the entire valve is installed or only the bonnet. The packless arrangement is obtained by integrally incorporating with the valve stem a machined stem collar which works in conjunction with the Metalflex sealing discs. The sealing discs consist of two sets of thin metal plates with a central hole, through which the valve stem passes.

The entire assembly of the valve stem and sealing discs is installed into the valve body assembly. The valve bonnet as screwed on to the valve body fits around the valve stem, lining up the latter and at the same time compressing the upper set of discs tightly against the lower set at the outer periphery. At the same time this compresses the two sets of discs against the stem collar, creating a self-spring seal.

The valve seat, when only the bonnet is installed, must conform to the requirements of the present body. The complete Marsh valve, however, has a patented Flexcone valve seat which is built into the body of the valve. It is a drawn monel metal spring cup permanently riveted to the thrust screw, and is swiveled to permit the disc to make a perfect seating. The cone shape of the valve disc in combination with the large area of the valve seat opening allows full pipe size flow capacity when



Sectional view of Marsh Type R bonnet assembly; (1) handle; (2) stem; (3) sealing discs; (4) bonnet; (5) adapter; (6) disc holder nut; (7) swivel joint; (8) disc holder and disc.

the valve is completely opened. In the graduated type of valve the Flexcone valve disc raising and lowering in the orifice of the valve seat modulates the area of the opening and in that way controls the flow in direct proportion to the setting of the indicator and dial.

The body of the valve is a steam bronze casting tested to 125 pounds pressure, the valve wheel is bakelite, and the union nut and tail piece are made of hard brass forgings.

The bonnet assembly or the complete valve is equally adapted to the requirements of forced hot water, vacuum, and vapor heating systems.